

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES			
2. AMENDMENT/MODIFICATION NO.			3. EFFECTIVE DATE		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. <i>(If applicable)</i>		
6. ISSUED BY			CODE		7. ADMINISTERED BY <i>(If other than Item 6)</i>		CODE		
8. NAME AND ADDRESS OF CONTRACTOR <i>(No., street, county, State and ZIP Code)</i>						(X)		9A. AMENDMENT OF SOLICITATION NO.	
								9B. DATED <i>(SEE ITEM 11)</i>	
								10A. MODIFICATION OF CONTRACT/ORDER NO.	
								10B. DATED <i>(SEE ITEM 11)</i>	
CODE			FACILITY CODE						

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

- ☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:
- (a) By completing items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

**13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS.
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: <i>(Specify authority)</i> THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES <i>(such as changes in paying office, appropriation date, etc.)</i> SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER <i>(Specify type of modification and authority)</i>

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER <i>(Type or print)</i>		16A. NAME AND TITLE OF CONTRACTING OFFICER <i>(Type or print)</i>	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
<i>(Signature of person authorized to sign)</i>		<i>(Signature of Contracting Officer)</i>	

Item 14. Continued.

CHANGES TO THE SPECIFICATIONS

1. New Sections - Add the accompanying new SECTION 09950 SEAMLESS ACRYLIC WALL COATINGS bearing the notation "ACCOMPANYING AMENDMENT NO. 0001 TO SOLICITATION NO. DACA63-01-B-0015," and add to the Table of Contents.
2. Replacement Sections - Replace the following sections with the accompanying new sections of the same number and title, bearing the notation "ACCOMPANYING AMENDMENT NO. 0001 TO SOLICITATION NO. DACA63-01-B-0015:"

01420	BASIC STORM WATER POLLUTION PREVENTION PLAN
09915	COLOR SCHEDULE
10101	MISCELLANEOUS SPECIALTIES AND EQUIPMENT
12320	CABINETS AND COUNTERTOPS

CHANGES TO THE DRAWINGS

3. New Drawings.- The new drawings listed below which accompany this amendment, bearing the notation "AM #0001" shall be added to and become a part of the contract documents:

CE10_01.cal	Seq 169	CE1.0 Storm water pollution prevention plan
CE11_01.cal	Seq 170	CE1.1 Storm water pollution prevention plan - details

4. Replacement Drawings.- Replace the drawings listed below with the attached new drawings of the same number, bearing the notation "AM #0001":

G11_01.cal	Seq 2	G1.1	Index of drawings & symbol legend
A11_01.cal	Seq 32	A1.1	First floor plan - area 1
A12_01.cal	Seq 33	A1.2	First floor plan - area 2
A13_01.cal	Seq 34	A1.3	First floor plan - area 3
A14_01.cal	Seq 35	A1.4	Second floor plan - area 1
A15_01.cal	Seq 36	A1.5	Second floor plan - area 2
A16_01.cal	Seq 37	A1.6	Second floor plan - area 3
A25_01.cal	Seq 43	A2.5	Second floor reflected ceiling plan - area 2
A51_01.cal	Seq 49	A5.1	Building elevations
A52_01.cal	Seq 50	A5.2	Building elevations
A57_01.cal	Seq 55	A5.7	Building sections
A58_01.cal	Seq 56	A5.8	Building sections
A512_01.cal	Seq 60	A5.12	Wall sections
A61_01.cal	Seq 62	A6.1	Enlarged unit plans
A62_01.cal	Seq 63	A6.2	Enlarged floor plans
A63_01.cal	Seq 64	A6.3	Interior elevations
A64_01.cal	Seq 65	A6.4	Casework sections
A71_01.cal	Seq 66	A7.1	Enlarged stair & elevator plans
A81_01.cal	Seq 69	A8.1	Opening schedule
A83_01.cal	Seq 71	A8.3	Door and frame details
A91_01.cal	Seq 73	A9.1	Miscellaneous details
A92_01.cal	Seq 74	A9.2	Miscellaneous details
SGN3_01.cal	Seq 77	SGN3	Structural general notes
SGN5_01.cal	Seq 79	SGN5	Structural general notes
SGN6_01.cal	Seq 80	SGN6	Structural general notes

S11_01.cal	Seq 81	S1.1	Foundation plan - area 1
S13_01.cal	Seq 83	S1.3	Foundation plan - area 3
S21_01.cal	Seq 84	S2.1	Second floor framing plan - area 1
S22_01.cal	Seq 85	S2.2	Second floor framing plan - area 1
S23_01.cal	Seq 86	S2.3	Second floor framing plan - area 1
S32_01.cal	Seq 89	S3.2	Roof framing plan - area 2
S41_01.cal	Seq 91	S4.1	Foundation sections & details
S42_01.cal	Seq 92	S4.2	Foundation sections & details
S54_01.cal	Seq 96	S5.4	Framing details
S55_01.cal	Seq 97	S5.5	Enlarged stair plans
S56_01.cal	Seq 98	S5.6	Stair details
S61_01.cal	Seq 99	S6.1	Canopy plan - area 2
S63_01.cal	Seq 101	S6.3	Pre-cast concrete details
S64_01.cal	Seq 102	S6.4	Pre-cast concrete details
S65_01.cal	Seq 103	S6.5	Pre-cast concrete details
M11_01.cal	Seq 104	M1.1	Symbol legend
M12_01.cal	Seq 105	M1.2	Equipment schedule
M33_01.cal	Seq 114	M3.3	First floor HVAC piping plan - area 3
M35_01.cal	Seq 116	M3.5	Second floor HVAC piping plan - area 2
M36_01.cal	Seq 117	M3.6	Second floor HVAC piping plan - area 3
M72_01.cal	Seq 122	M7.2	HVAC controls
M81_01.cal	Seq 123	M8.1	Mechanical details
P21_01.cal	Seq 126	P2.1	First floor plumbing plan - area 1
P22_01.cal	Seq 127	P2.2	First floor plumbing plan - area 2
P41_01.cal	Seq 135	P4.1	Plumbing details
E21_01.cal	Seq 154	E2.1	First floor power & special systems plan - area 1
E22_01.cal	Seq 155	E2.2	First floor power & special systems plan - area 2
E23_01.cal	Seq 156	E2.3	First floor power & special systems plan - area 2
E25_01.cal	Seq 158	E2.5	Second floor power & special systems plan - area 2
E71_01.cal	Seq 160	E7.1	Electrical typical quarters enlarged plan

END OF AMENDMENT

SECTION 01420

STORMWATER POLLUTION PREVENTION PLAN

PART 1 GENERAL

1.1 SUMMARY

This Section provides an outline of a basic Stormwater Pollution Prevention Plan (SWPPP) for a National Pollutant Discharge Elimination System (NPDES) General Permit. The Contractor shall familiarize themselves with the guidelines established in the attached Storm Water Pollution Prevention Plan (SWPPP) for the Laughlin Air Force Base (AFB). Adherence to the guidelines established in the Laughlin AFB SWPPP is required.

1.1.1 References

EPA NPDES Storm Water Sampling Guidance Document, July 1992.

The National Atlas of the United States of America, U.S. Department of the Interior Geological Survey, 1970.

1.2 PROJECT DESCRIPTION

PROJECT TITLE:

Visitor's Quarters, FY 2001, MXDP99-3000, Laughlin Air Force Base, Del Rio, Texas

OWNER/OPERATOR:

Department of the Air Force, Laughlin Air Force Base, Del Rio, Texas

This project consists of the construction of a two story facility with 96 living units, an administration area, housekeeping areas, a lobby and mechanical rooms. Site improvements include clearing and grubbing, rock excavation, grading, construction of the main facility, construction of two asphaltic concrete parking lots, construction of a storm drain network for conveyance of storm water runoff, installation of sanitary sewer, water, natural gas, electric and communication services. Also included within the proposed Site improvements are associated entrances, curb and gutter, sidewalks, walls and associated Site landscaping.

Soil disturbing activities will include: clearing and grubbing, installation of stabilized construction entrances, erosion and sediment controls, excavation, grading, trenching for utilities, foundation construction and earthwork preparation for construction and landscaping. The entire Site, consisting of approximately 8 acres, will be disturbed by varying construction activities.

Storm drainage features that are included in the project consist of culverts, storm drain lines and drop inlets, headwalls, and graded swales, all designed to convey runoff to an existing drainage structure.

1.3 STANDARD INDUSTRIAL CLASSIFICATION (SIC)

The construction activities associated with this project have the following SIC codes in accordance with the Standard Industrial Classification Manual published by the Office of Management and Budget (OMB).

1522 - General Contractors - Residential Buildings, Other Than Single - Family

1611 - Highway and Street Construction, Except Elevated Highways

1623 - Water, Sewer, Pipeline, and Communications and Power Line

1629 - Heavy Construction, Not Elsewhere Classified

1 . 4 LOCATION

The site is located in the southern portion of the Laughlin Air Force Base at the intersection of Fourth and Arnold Streets. Laughlin AFB is located in Val Verde County, approximately 6 miles east of Del Rio Texas via Highway 90. The approximate coordinates for the project site are 29 deg 21 min 03 sec North, 100 deg 47 min. 11 sec. West.

1 . 5 RECEIVING WATERS

As stated in the Laughlin Air Force Base Stormwater Pollution Prevention Plan (SWPPP), annual precipitation in the region is approximately 16 to 20 inches. Consequently, storm water flows tend to accumulate in wetland areas on Base and subsequently evaporate or percolate into the soil. However, in the event of a heavy rain event, storm water will flow off base via Zorro Creek, unnamed tributaries, and sheet flow. This runoff flows into the Rio Grande River via Sacatosa Creek, Zorro Creek or unnamed tributaries.

PART 2 SITE DESCRIPTION

2 . 1 EXISTING CONDITIONS

The Site is approximately 8 acres, all currently undeveloped. The existing conditions consist of a moderately sloping area with native grasses and limestone rock outcroppings. The site drains overland in a northeast direction and into a drainage ditch that parallels Arnold Street. Runoff is conveyed to an existing concrete drainage structure housing 3 culverts which convey runoff beneath Fourth Street to downstream drainage improvements.

2 . 2 FUTURE CONDITIONS

Upon completion of the project, the site will be graded and drained so that upstream runoff will be conveyed behind the site via a graded swale to a surface inlet at the southeast portion of the site. Developed runoff from the site will be conveyed via surface flow in a northeasterly direction. Runoff will continue across the parking lots and into a depression with surface inlets. The developed runoff will be combined with the previously discussed upstream runoff and conveyed to the aforementioned drainage structure and culverts. From this point, runoff will continue it's historic pattern via graded swales, and culverts before exiting the base.

2 . 3 CONSTRUCTION PHASING

The following is the construction phasing and maintenance for this project.

The anticipated commencement date for this project is October 15, 2001 with a tentative completion date of April 15, 2003. The Contractor's Detailed SWPPP shall reference the bid document to update any executed options and subsequent construction activities. The following major construction activities are anticipated for this project:

- A. Mobilization of Contractor and establishing storm water pollution prevention control structures
- B. Clearing and Grubbing
- C. Rock Excavation
- D. Grading and Drainage
- E. Utility Installation
- F. Foundation Work
- G. Storm Drain Improvements
- H. Building Improvements
- I. Paving / Flatwork
- J. Landscaping
- K. Site Stabilization
- L. Removal of Storm Water Control Measures

2.4 SOILS DATA

The soils encountered on this Site consist of coarse to fine, silty and clayey gravel. This, along with native vegetation comprise the surface layer. Subsurface conditions include weathered white hard limestone. A complete Geotechnical Report has been prepared by The U.S. Army Corps of Engineers, Fort Worth District.

2.5 DRAWINGS

Related Contract Drawings include:

CS.0	PROJECT LOCATION MAP-CONTRACTOR STAGING AREA & HAUL ROUTE
CS.1	SITE SURVEY
CS.2	BORING LOCATIONS
CS.3	LOGS OF BORING
CG.0	CIVIL MASTER LEGEND
C0.1	SITE DEMOLITION PLAN
C1.0	SITE PAVING PLAN
C1.1	HORIZONTAL CONTROL PLAN
C1.2	ENTRANCE PROFILES
C2.0	BASIN BOUNDARY
C2.1	SITE GRADING PLAN
C3.0	SITE UTILITY PLAN
C3.1	SANITARY SEWER AND STORM DRAIN PLAN AND PROFILE
C3.2	STORM DRAIN PLAN AND PROFILE
C5.0	PAVING DETAILS
C5.1	PAVING DETAILS
C5.2	STORM DRAIN DETAILS
C5.3	STORM DRAIN DETAILS
C5.4	UTILITY DETAILS
C5.5	UTILITY DETAILS
C5.6	GENERAL DETAILS
CE1.0	STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
CE1.1	STORM WATER POLLUTION PREVENTION PLAN (SWPPP) - DETAILS

Drawings associated with the basic SWPPP provide details for the layout and construction of storm water control features required to alleviate erosion potential during the construction phase of this project. The following is a list of the SWPPP drawings:

SHEET CE1.0 (169 OF 170) STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

SHEET CE1.1 (170 OF 170) STORM WATER POLLUTION PREVENTION PLAN (SWPPP) - DETAILS

PART 3 EROSION AND SEDIMENT CONTROLS

3.1 TEMPORARY STABILIZATION

All unpaved, graded, and disturbed portions of the site where construction activity temporarily ceases for at least 21 days will be stabilized with a hay mulch no later than 14 days from the last construction activity in that area. After tilling, where applicable, each area shall be mulched with hay at the rate of 3.18 metric tons per hectare. The hay mulch is to be replaced with straight rolling coulters spaced not more than 203 mm apart or as directed by the Contracting Officer.

3.2 PERMANENT STABILIZATION

Permanent stabilization will be through the use of landscaping features. The Contractor shall adhere to the Landscaping Plans as contained in the contract documents.

3.3 STRUCTURAL CONTROLS

The contractor shall use silt fences, rock berms, inlet protection measures, and stabilized construction entrances and any other structural controls necessary to prevent soil erosion at or adjacent to the construction site. In general, structural controls should be used along the perimeter of areas subject to grading and excavation, at each new and existing storm inlet, culvert and drainage swale. Erosion and sediment control details are depicted on sheet 2 of 2 of the SWPPP Drawings.

3.3.1 Silt Fence

Silt fences consist of geotextile fabric supported by poultry netting or other backing stretched between either wooden or metal posts with the lower edge of the fabric securely embedded in the soil. The fence is typically located downstream of disturbed areas to intercept runoff in the form of sheet flow. A silt fence provides both filtration and time for the sediment to fall out of the runoff. It also allows for reduction of the velocity of the runoff. A properly installed silt fence can be relocated during construction and reused in other areas and other projects.

3.3.2 Rock Berms

Rock berms are small barriers consisting of rip rap contained within woven wire sheathing. These barriers are placed across drainage swales or ditches to reduce the velocity of small concentrated flows, provide limited barriers for sediment and help disperse concentrated flows, reducing erosion.

PART 4 STORM WATER MANAGEMENT CONTROLS

4.1 Drainage Swales and Ditches

Drainage swales and ditches will be used as permanent features to control and convey developed and undeveloped runoff to storm drain improvements including inlets and culverts.

4.2 Drop inlets

A total of 7 Standard Surface Inlets are to be constructed to intercept developed and undeveloped runoff and in conjunction with various sizes of storm drain, convey runoff to the existing drainage structure at the downstream corner of the site. The inlets are detailed in the construction drawings.

4.3 Drainage Culverts

Several pipe culverts are to be constructed beneath entrances to the site. The culverts convey runoff from swale to swale beneath paved entrances.

PART 5 BEST MANAGEMENT PRACTICES (BMP) DURING CONSTRUCTION

The construction Contractor or its subcontractors shall be responsible for minimizing erosion and controlling sediment in storm runoff. The Contractor shall address Best Management Practices (BMPs) to prevent storm water pollution. The Contractor shall familiarize themselves with the Storm Water Pollution Prevention Plan (SWPPP) Prepared for the Laughlin Air Force Base and the Best Management Practices (BMP) identified in section 4.0 therein. A copy of the Laughlin AFB SWPPP is attached to this report.

5.1 WASTE MATERIALS

Solid waste materials (trash and construction debris) shall be placed in appropriate waste containers and covered. Waste containers shall be emptied regularly; they shall not be allowed to overflow. The disposal area of excavated materials from project construction shall not be utilized for waste disposal. Routine janitorial service shall be provided for all construction buildings and surrounding grounds. No construction waste materials including concrete, shall be buried or otherwise disposed of on-site. All site personnel shall be briefed on the correct procedures for solid waste disposal.

5.2 HAZARDOUS WASTE

No hazardous waste has been identified at the site, however, if hazardous wastes are uncovered, hazardous waste shall be handled, stored, and disposed of in accordance with all Federal, State and Local regulations before all construction activities. Chemical waste shall be stored in clearly labeled corrosion-resistant containers, and stored in designated areas before removal from the site. Materials in excess of job requirements shall not be stored on-site. All site personnel shall be briefed on the correct procedures for hazardous waste disposal.

5.3 SANITARY WASTE

On-site sanitary facilities shall be established. Facility location, design, maintenance and waste collection practices shall be in accordance with local regulations. Temporary portable toilets will be provided at the site for the needs of construction workers and others performing work or furnishing services on the project site. These facilities will be serviced by the vendor on a regular or as needed basis.

5.4 OFF-SITE VEHICLE TRACKING AND DUST

Every effort shall be made to keep vehicles from tracking soils from the construction site, access points, material borrow, and disposal areas. The contractor shall identify entrances or access points to the construction site, on-site and off-site borrow and disposal areas and types of storm water structural controls needed at these areas on the SWPPP drawings. Dust generation shall be controlled by sprinkling, chemical treatment, light bituminous treatment, or similar methods. Materials hauled from the construction site in open-bed vehicles shall be covered or otherwise stabilized to avoid loss of material during transport.

Temporary parking area(s) to be used more than 30 calendar days for the Contractor's equipment or personal vehicles shall be paved with base material per specifications and shall be removed by the Contractor upon project completion.

A stabilized construction entrance will be constructed as detailed on the plans to minimize offsite vehicle tracking of sediments. The paved streets adjacent to the site entrances will be swept on a regular or as needed basis to remove any excess mud, dirt or gravel tracked from the site.

5.5 FERTILIZERS

If fertilizers are used, they shall be applied in accordance with the specifications, i.e. in the stated amounts and only when weather conditions are appropriate.

5.6 CONSTRUCTION VEHICLE MAINTENANCE AND REPAIR

Specific areas shall be designated for equipment maintenance and repair to minimize potential impact on storm runoff. Locations shall be chosen to minimize potential impacts on receiving streams and waterways. These locations shall be approved by the Contracting Officer. All construction vehicles shall be regularly inspected for leaks and receive regularly scheduled maintenance to reduce the potential for leaks.

5.7 VEHICLE FUELING

Vehicle fueling at the project site shall be conducted in accordance with good safety practices to reduce the potential for leaks and spills. Only properly constructed fuel containers shall be used on-site and shall be labeled and stored in accordance with applicable, Federal, State and Local codes. Washing curing waters shall be drained into a retention basin constructed by the Contractor and are to be cleaned up by the Contractor to the satisfaction of the Contracting Officer after completion of the project.

PART 6 TIMING OF CONTROLS AND ACTIVITIES

The Contractor shall erect the required silt fences and structural controls prior to starting any excavation. Inlet protection shall be constructed as soon as the inlets are constructed.

PART 7 COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

An Environmental Assessment (EA) was prepared in October 2000 and addressed the impacts of multiple Construction and Demolition Projects on the Laughlin Air Force Base, including the Visitor's Quarters Project. As part of the Environmental Analysis, a Finding of No Significant Impact was issued for the Multiple Construction and Demolition Projects, Laughlin Air Force Base, Texas. As a result of the proposed construction, the summary of the Proposed Action and No Action Alternative studies found No Significant Impact to Noise, Land Use, Air Quality, Infrastructure and Utilities, Surface Water, and Earth Resources.

The contractor shall adhere to and comply with all Local, State, Federal and applicable environmental regulations.

PART 8 MAINTENANCE AND INSPECTION PROCEDURES

All storm water pollution prevention measures will be inspected by the General Contractor's quality control director or project superintendent at least once every seven (7) days and within twenty-four (24) hours following any storm event of 13 mm (0.5 inches) or greater. The inspector shall thoroughly understand the requirements of the Contractor's SWPPP and shall have a basic knowledge of the engineering principles for reducing runoff pollution.

Temporary grading shall be inspected for erosion and soil loss from the site. Temporary or permanent seeding and planting will be inspected for bare spots, washouts and healthy growth. Discharge points will be inspected for signs of erosion or sediment associated with the discharge. Locations where vehicles enter and exit the site shall be checked for signs of off-site sediment tracking, including erosion control at material borrow and disposal areas. Best Management Practices and pollution control maintenance procedures will be inspected for adequacy.

All deficiencies shall be noted in the inspection reports and submitted to the Contracting Officer after each inspection. Corrections to these problems will be implemented within seven calendar days. The Contractor shall comply with the NPDES permit requirements to prepare the INSPECTION AND MAINTENANCE REPORT after each inspection event. These reports shall be posted on the project bulletin board and kept in the project file on site. The SWPPP shall be revised as necessary. After final stabilization has been achieved, the Contractor shall inspect the site once a month until final inspection and project acceptance by the Contracting Officer.

PART 9 MATERIAL INVENTORY

The following materials which may be present on-site during construction shall have a Material Safety Data Sheet (MSDS) which shall be made available to the Contracting Officer. These materials include concrete, paints, sealants, petroleum-based products, cleaning solvents, fertilizers, tar, asphalt, and steel reinforcing bars. The list of materials and respective Material Safety Data Sheets (MSDS) shall be included in the Contractor's detailed SWPPP.

PART 10 NON-STORM WATER DISCHARGE

Non – storm water discharges shall not be allowed during construction of the project except for emergency fire-fighting flows and other flows permitted in accordance with 63 FR 128, July 6, 1998 as referenced in paragraph, COMPLIANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS. In addition, any spill of a hazardous substance or oil more than reporting quantities shall be reported as required under 40 CFR 110. Further, The Spill Prevention and Response Plan (SPR 705) outlined in section 4 of the attached Laughlin AFB SWPPP shall be adhered to.

PART 11 CONTRACTOR COMPLIANCE

The Contractor shall use this basic SWPPP that includes both narrative and drawings (Storm Water Control Plans). The detailed SWPPP shall state the following as a minimum: (1) the project start and completion dates, (2) bid options to be executed with the project, (3) sequence of construction activities and pollution control measures, (4) discussion of the Best Management Practices (BMP) and implementation of BMP during project execution, (5) identify the list of materials brought on – site including the MSDS, (6) runoff computation of each drainage area (see paragraph 4.1, and (7) identify the type of storm control structures on the revised storm water control plans.

Being responsible for the daily operations at the construction site, the Contractor shall submit the detailed SWPPP (including the revised storm water control plans), and a Notice of Intent (NOI) for the storm water discharges associated with Industrial Activity under NPDES General Permit to EPA Region 6 in Dallas, Texas. The NOI (EPA form 3510-6) shall be submitted no later than 48 hours before start of construction. A separate NOI is required for each construction contract or each phase of the construction activities. The mailing address for NOI submittal is:

Stormwater Notice of Intent (4203)
USEPA, 401 M Street, SW
Washington, D. C. 20460

The Contractor's detailed SWPPP (including the revised storm water control plans) a copy of submitted NOI shall be provided to the Contracting Officer before start of construction. A copy of the U.S. Army Corps of Engineers NOI (obtained from the Contracting Officer), the Contractor's NOI, and a brief project description shall be posted on the project bulletin board. The Contractor's detailed SWPPP shall be kept on – site at all times. During construction, the Contractor shall perform work as required per paragraph, MAINTENANCE AND INSPECTION

PROCEDURES in this section. No later than 10 working days after final stabilization, the Contractor shall submit the Notice of Termination (NOT), EPA Form 3510-7 to both the EPA and the U.S. Army Corps of Engineers. Submission to the Corps of Engineers shall be made to the following address :

Department of the Army
U.S. Army Corps of Engineers
CESWF-PER-EE
ATTN: Kathy Mitchell
P.O. Box 17300
Fort Worth, Texas 76102-0300

Two copies of the submitted NOT shall be provided to the Contracting Officer's project file. EPA Forms are available on web site at : <http://www.epa.gov/earthlr6/6en/w/forms.htm>

PART 12 ATTACHMENTS

- Owner Certification
- Stormwater Pollution Prevention Plan Inspection And Maintenance Report
- 1.0 Introduction
- 2.0 Storm Water Pollution Prevention Team
- 3.0 Facility Description
- 4.0 Storm Water Management Program
- 5.0 Comprehensive Site Compliance Evaluation
- 6.0 Storm Water Sampling And Monitoring Program

12.1 OWNER CERTIFICATION

OWNER CERTIFICATION
FOR
VISITOR QUARTERS
LAUGHLIN AFB, TX

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

MICHAEL J. MOCEK, P.E.
DEPUTY DISTRICT ENGINEER

Date Certified : _____

Attachments

Sheet CE1.0 (169 of 170)	Storm Water Pollution Prevention Plan (SWPPP)
Sheet CE1.1 (170 of 170)	Storm Water Pollution Prevention Plan (SWPPP) - Details

12 . 2 STORMWATER POLLUTION PREVENTION PLAN

STORMWATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

INSPECTOR : _____ DATE : _____

INSPECTOR'S

QUALIFICATION : _____

DAYS SINCE LAST RAINFALL: _____ AMOUNT OF LAST RAINFALL : _____ INCHES

STABILIZATION MEASURES

AREA	DATE SINCE LAST DISTURBANCE	DATE OF NEXT DISTRUBANCE	STABILIZED? (YES / NO?)	STABILIZED WITH	CONDITION

STABILIZATION REQUIRED :

TO BE PERFORMED BY : _____ ON or BEFORE : _____

OTHER CONTROLS – STABILIZED CONSTRUCTION ENTRANCE

IS MUCH SEDIMENT TRACKED ONTO THE ROAD?	ARE DUST AND SEDIMENT CONTROL MEASURES WORKING?	DOES ALL TRAFFIC USE STABILIZED ENTRANCE TO THE SITE?	ARE ASSOCIATED DRAINAGE STRUCTURES WORKING?

STORMWATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

MAINTENANCE REQUIRED FOR CONSTRUCTION ENTRANCE :

TO BE PERFORMED BY : _____ ON OR BEFORE : _____

OTHER CONTROLS – DEVELOP SITE SPECIFIC TABLES AS NEEDED

FOR ALL STABILIZATION MEASURES, STRUCTURAL, AND NON – STRUCTURAL CONTROLS

CHANGES / CORRECTIONS REQUIRED IN POLLUTION PREVENTION PLAN :

REASONS FOR CHANGES :

INSPECTOR'S SIGNATURE : _____ DATE : _____

MAINTENANCE REQUIRED FOR SEDIMENT BASIN (S) :

TO BE PERFORMED BY : _____ ON OR BEFORE: _____

STRUCTURAL CONTROLS – SILT FENCE (S)

FROM	TO	IS THE BOTTOM OF THE FABRIC STILL BURIED?	IS THE FABRIC IN GOOD CONDITION?	HOW DEEP IS THE SEDIMENT?
<hr/>				

STORMWATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

MAINTENANCE REQUIRED FOR THE SILT FENCE (S):

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

STRUCTURAL CONTROLS – EARTH DIKES (S)

FROM	TO	IS DIKE STABILIZED?	IS THERE EVIDENCE OF WASH-OUT OVERTOPPING?
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MAINTENANCE REQUIRED FOR THE EARTH DIKE (S):

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

1.0 INTRODUCTION

The primary objective of the Laughlin Air Force Base (AFB) storm water pollution prevention plan (SWPPP) is to minimize the impacts of industrial activities at the Base on storm water runoff. It was prepared to document existing storm water management practices at the Base and act as a guide for Base personnel responsible for ensuring that the potential for storm water contamination is minimized, while meeting the requirements of the new multi-sector general permit. It will serve as the primary reference for descriptions of current facilities and activities that impact storm water discharges, as well as Laughlin AFB's current and planned storm water management practices. This plan summarizes the following information:

- ✍ The individuals responsible for storm water pollution prevention at Laughlin AFB;
- ✍ A general description of the Base as it pertains to storm water outfalls and activities that could potentially influence storm water quality;
- ✍ The specifics of Laughlin AFB's plan to minimize storm water pollution;
- ✍ Procedures to be used for assessing compliance with the plan; and
- ✍ An overview of the Base storm water sampling and monitoring program.

This section of the Laughlin AFB SWPPP provides background information concerning the applicable storm water discharge requirements and the purpose of the plan.

1.1 Background

In November 1990, federal storm water discharge requirements were promulgated as part of the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act (55 Federal Register 48062-48901). These regulations, as stated in 40 Code of Federal Regulations (CFR) Parts 122, 123, and 124, require the owners of "facilities that discharge storm

water associated with industrial activity" to apply for a storm water permit if storm water is discharged to (1) waters of the United States or (2) separate storm sewer systems.

NPDES permits for Laughlin AFB were issued by U.S. Environmental Protection Agency (EPA) Region VI (Appendix A). The Region VI requirements for storm water permitting were not substantially different from the federal guidelines in 40 CFR 122. NPDES permits were issued for four outfalls under the general permit.

In September, 1995, EPA finalized the regulations for a new permit, the Multi-Sector General Permit (60 Federal Register 50803-51320), which contains industry-specific guidance for various types of industrial activity. In this permit, common requirements for all SWPPPs are outlined, but EPA has also defined 29 categories of industrial activity that are subject to this regulation. Activities at Laughlin AFB fall within three of those categories, which are outlined in the industry-specific sections of the permit guidance:

- ✍ Vehicle maintenance areas, equipment cleansing areas, or deicing areas associated with air transportation facilities;
- ✍ Hazardous waste treatment, storage, or disposal facilities; and,
- ✍ Treatment Works.

Most of the regulated activity at Laughlin AFB falls under the first category. Examples include refueling, aircraft maintenance, vehicle maintenance, materials handling, equipment cleaning, and runway cleaning. Deicing is not a common activity at Laughlin AFB.

The Defense Reutilization and Marketing Office (DRMO) hazardous waste storage facility initiates the second category requirements. The Resource Conservation and Recovery Act (RCRA) permit for this storage facility is contained in Appendix B; the Base is not authorized to treat or dispose of wastes at the facility.

The requirements for treatment works are necessitated by the existence of the sanitary treatment system, a facultative (aerobic and anaerobic) lagoon system near the south fence. The waste disposal limit from the State of Texas for this system is included in Appendix C.

The former storm water regulations required that a subject facility, such as Laughlin AFB, apply for either an individual, a group, or a general permit. Laughlin AFB was included in a group storm water permit application (No. 1258) that consisted of 133 U.S. Air Force (USAF) installations. On November 16, 1992, Laughlin AFB submitted Notices of Intent (NOI) to the EPA for storm water discharges (four NOIs for four outfalls) associated with industrial activities under the general permit. In response to the new regulations, Laughlin AFB initiated four Notices of Termination (NOTs) for the outfalls and initiated one NOI for the facility under the multi-sector general permit (Appendix A). All NPDES storm water permits require the subject facility to develop and implement a SWPPP as part of the permit conditions.

1.2 Purpose

The purpose of the SWPPP is to ensure compliance with the conditions of the pending multi-sector general storm water discharge permit for Laughlin AFB. Compliance will be ensured by identifying sources of pollution that may potentially affect the quality of storm water discharges and by ensuring implementation of practices to minimize and control pollutants. The primary use of this document is as a guide for individuals at the Base who are responsible for ensuring that activities are conducted in a manner that minimizes the potential for storm water pollution. It will serve as the primary reference for descriptions of current facilities and activities that impact storm water discharges. It will also be the primary reference for descriptions of Laughlin AFB's current and planned storm water management practices.

1.3 Requirements for an SWPPP

All NPDES storm water permits require the subject facility to develop and implement an SWPPP as part of the permit conditions. Using the Final NPDES Multi-Sector General Permit (issued in the Federal Register) as a baseline for requirements allowed Laughlin AFB to prepare and implement an SWPPP. Facilities with a SWPPP written following this guidance may incorporate any necessary changes during a later revision. Based on the NPDES Multi-Sector General Permit requirements (common requirements), the SWPPP must include:

1. Storm Water Pollution Prevention Team (SWPPT), identifying members and individual responsibilities.
2. Assessment of Potential Pollutant Sources, identifying activities, materials, and physical features that may contribute to preventing storm water pollution. These include:
 - a. **Drainage**, a site map identifying:
 - ✍ drainage basins and outfalls,
 - ✍ structural control measures,
 - ✍ surface water bodies,
 - ✍ locations where significant materials are exposed to storm water runoff,
 - ✍ locations where major spills or leaks have occurred within 3 years,
 - ✍ fueling stations,
 - ✍ vehicle and equipment maintenance and/or cleaning areas,
 - ✍ loading/unloading areas,
 - ✍ waste treatment storage or disposal areas,
 - ✍ liquid storage areas,
 - ✍ processing areas, and
 - ✍ storage areas.
 - b. **Inventory of Exposed Materials**, including a narrative description of all:
 - ✍ significant materials potentially exposed;
 - ✍ handling, storage, treatment, and disposal practices; and
 - ✍ existing materials management practices.
 - c. **Significant Spills and Leaks**

- d. **Sampling and Reporting Requirements**
 - e. **Risk Identification and Summary of Potential Pollutant Sources**
3. Selection and Implementation Measures and Controls, including descriptions of the use of the following components, at a minimum:
 - a. **Good Housekeeping**
 - b. **Preventive Maintenance**
 - c. **Spill Prevention and Response Measures**
 - d. **Inspections**
 - e. **Employee Training**
 - f. **Recordkeeping and Internal Reporting Procedures**
 - g. **Non-Storm Water Discharge Certification**
 - h. **Sediment and Erosion Control**
 - I. **Management of Runoff**
4. Comprehensive Site Compliance Evaluation, providing for regular inspection of areas of industrial activity to occur at least annually. Revisions to the SWPPP based on the findings of the inspection must occur within 2 weeks of the inspection and implementation of changes must occur within 12 weeks of the inspection.

Additional specific requirements also exist for facilities subject to Emergency Planning and Community Right-to-Know-Act (EPCRA) Section 313 requirements, for discharges through municipal separate storm sewers serving a population of 100,000 or more, and for salt storage. Laughlin AFB is no longer subject to EPCRA Section 313 requirements at this time. Prior to FY1998 Laughlin AFB reported methyl ethyl ketone (MEK) as exceeding 10,000 lbs, after exemptions. These requirements would include:

1. In areas where Section 313 chemicals are stored, processed, transferred, or other wise handled, drainage control and/or diversionary structures will be provided to collect spills, prevent run-on contact, and prevent precipitation or wind exposure. At a minimum, these shall include either curbing or roofs.
2. Discharges from the above listed areas will be restrained and discharged through manually activated devices.
3. Additional preventive maintenance and housekeeping, facility security, and employee training will be implemented.

1.4 Plan Maintenance

The Laughlin AFB SWPPP is intended to be a living document. Initially, a site visit was conducted from 31 July to 2 August 1996 to gather information to develop this SWPPP. This information included assessments of storm water outfalls and outside material storage areas. This plan will be reviewed regularly and, at a minimum, a comprehensive review will be conducted annually by the Base's SWPPT. During this review, the reviewers should confirm the accuracy of the potential pollutant sources and best management practices (BMPs) in place, determine the effectiveness of the plan, and assess compliance with the terms and conditions of the permit. The plan must be revised accordingly (within two weeks for changes in the potential sources and within 12 weeks for changes in measures and controls). The following activities will be accomplished at each evaluation:

- ✍ Inspection of all storm water drainage areas for evidence of pollutants entering the drainage system;
- ✍ Observation of structural control measures, sediment controls, and other storm water BMPs to ensure proper operation and to evaluate effectiveness;
- ✍ Evaluation of the effectiveness of BMPs;
- ✍ Preparation of a report summarizing inspection results and follow-up actions that identifies the date of the inspection and the personnel who

conducted the inspection and containing a full copy of the field data sheets;

- ✍ Revision of the plan as needed within 2 weeks of inspection; and
- ✍ Implementation of any necessary changes within 12 weeks of the inspection.

2.0 STORM WATER POLLUTION PREVENTION TEAM

Laughlin AFB is in the process of establishing an SWPPT (under the Pollution Prevention Team) to ensure that the SWPPP is implemented and maintained in accordance with good engineering and management practices. This team is responsible for identifying and incorporating into the plan any potential sources of pollution that could reasonably be expected to impact the quality of storm water discharges from Laughlin AFB. In addition, this team is responsible for developing, documenting, and implementing improved management practices to reduce the potential for contamination of storm water discharges.

2.1 Membership and Responsibilities

Members of the Laughlin AFB SWPPT include the following:

- ✍ Support Ground Commander;
- ✍ 47th Supply Squadron Chief (47 LS/LL);
- ✍ 47th Staff Judge Advocate;
- ✍ Superintendent, Bioenvironmental Engineering (47 AMDS/SGPB);
- ✍ Satellite Accumulation Area Supervisor(s) (47 OG/MAEE and others);
- ✍ Hazardous/Nonhazardous Materials Supply Specialist (47LS/LGSDI);
- ✍ Fuels Contractor (47 LS/LGSF);
- ✍ Liquid Fuels Foreman (Sea Air);
- ✍ Superintendent(s), Pavements and Grounds;
- ✍ Plumbing Foreman;
- ✍ Civil Engineering Computer Aided Design (CAD) Supervisor;
- ✍ Environmental Engineer (47 CES/CEV);

- ✍ Environmental Engineering SWPPP Coordinator (47 CES/CEV);
- ✍ Headquarters Air Education and Training Command (AETC) SWPPP Supervisor;
- ✍ Motor Pool Supervisor (47 LS/LGT);
- ✍ Auto Hobby Shop Supervisor;
- ✍ Superintendent(s) of Entomology; and
- ✍ Golf Course Manager.

Table 2-1 details responsibilities of the committee members.

Table 2-1

Team Member Responsibilities

Member	Responsibility
47th Supply Squadron Chief -	Chair the SWPPT meetings and coordinate implementation of the plan to ensure compliance with permit provisions and pollution prevention procedures. In addition, the chairperson is vested with the authority to assign additional personnel to the SWPPT as may be necessary.
47th Staff Judge Advocate -	Assist in the continued development of BMPs and advise the SWPPT on the legal aspects associated with plan development, implementation, and evaluation.
Superintendent, Bioenvironmental Engineering	Identify potential spill sources and all new toxic and hazardous materials located on the Base and review environmental incidents to determine and implement potential improvements to the SWPPP. The review will include monitoring procedure changes, procedures for spill response and prevention to prevent human exposure, and the evaluation and overall effectiveness of the plan.

Table 2-1**(Continued)**

Member	Responsibility
Satellite Accumulation Area Supervisor(s)	Assist in the development and enhancement BMPs for all accumulation areas on Base. Identify toxic and hazardous materials located on Base, identify potential spill sources, and suggest methods to improve spill prevention or response. Perform site evaluation inspections and provide input for plan modifications as required.
Hazardous/Nonhazardous Materials Supply Specialist	Assist in the development and enhancement of BMPs for all areas associated with stored chemicals. Identify toxic and hazardous materials located on Base, identify potential spill sources, and suggest methods to improve spill prevention or response. Perform site evaluation inspections and provide input for plan modifications as required.
Fuels Contractor -	Identify and optimize use of oil/water separators. Assist in the development and improvement of BMPs for all petroleum/oil/lubricant (POL) storage areas. Identify toxic and hazardous fuel related materials located on Base, identify potential spill sources, and suggest methods to improve spill prevention or response. Perform site evaluation inspections and provide input for plan modifications as required.
Superintendent(s), Pavements and Grounds -	Assist in the development and improvement of BMPs for Pavements and Grounds drainage areas. Identify materials that may accumulate in areas subject to storm water runoff, as well as potential contaminant sources (stored or applied) such as pesticides, fertilizers, phosphate detergents, and equipment maintenance liquids. Suggest methods to prevent contaminated storm water runoff and erosion. Collect input from the Superintendent(s) of Entomology and Golf Course Grounds on pesticide and fertilizer BMPs. Perform site evaluation inspections and provide input for plan modifications as required.

Table 2-1**(Continued)**

Member	Responsibility
Plumbing Foreman and Civil Engineering CAD Supervisor -	Update site maps in coordination with the Environmental Engineering Staff in support of the assessment phase of the SWPPP. The site maps will, at a minimum, include: ✍ Discharge points (industrial outfalls); ✍ Drainage patterns and direction of flow; ✍ Identification of pollutants potentially subject to discharge for each drainage area; ✍ Structural control measures; ✍ Surface water bodies receiving storm water discharges from the Base; ✍ Locations of significant materials exposed to storm water; and ✍ Locations of industrial activity. Ensure that tests are conducted as necessary to identify and eliminate any non-storm water discharges.
Environmental Engineer -	Assist in developing BMPs, identifying toxic and hazardous materials located on Base, and identifying non-storm water discharges and potential spill sources. Ensure that the preventive maintenance program of the SWPPP incorporates the inspection and maintenance of storm water management devices/storage containers and routine inspections of operations and equipment. Perform site evaluation inspections and provide input for plan modification as required.
Environmental Engineering SWPPP Coordinator and HQ-AETC SWPPP Supervisor -	Coordinate development, implementation, evaluation, and monitoring of the SWPPP. Develop an employee training program, maintain records, and ensure the plan is revised annually. Schedule periodic committee meetings in coordination with the Deputy Support Group Commander as needed. Coordinate the annual comprehensive review.
Motor Pool and Auto Hobby Shop Supervisors -	Assist in the development of BMPs related to vehicle maintenance areas on Base. Identify toxic and hazardous materials located at vehicle maintenance areas and identify any non-storm water discharges and potential spill sources. Ensure that the preventive maintenance program of the SWPPP incorporates the inspection and maintenance of storm water management devices and liquid storage containers and routine inspections of operations and equipment. Perform site evaluation inspections and provide input for plan modification as required.

Table 2-1

(Continued)

Member	Responsibility
Superintendent(s) of Entomology and Golf Course Manager	Assist the Superintendent of Grounds in the development of BMPs related to pesticide and fertilizer application on site. Identify and minimize toxic materials and eutrophying materials stored at the Entomology building and provide a preventive maintenance and inspection program to prevent spills and migration of chemicals.
-	
-	

2.2 Consistency with Existing Environmental Management Plans

The SWPPT will evaluate existing environmental management plans (e.g., Pollution Prevention Management Plan, Spill Prevention and Response Plan, and Hazardous Waste Management Plan) for consistency and determine which provisions, if any, should be incorporated into the SWPPP during the plan's annual update.

3.0 FACILITY DESCRIPTION

Laughlin AFB is located in Val Verde County, Texas, approximately 6 miles east of Del Rio. The Base spans approximately 3,956 acres. Laughlin AFB provides pilot training and is home to the 47th Flying Training Wing.

The site plan (Figure A3-1), located in Pocket A of this SWPPP, provides an overview of the Base layout, including buildings, parking areas, roads, runways, aprons, and boundary lines. Drainage areas, outfalls, and several exposure areas associated with industrial activities are also identified in Figure A3-1. Figure A3-2 (Pocket A) identifies most of the exposure areas in detail. These figures were constructed solely for locating areas and activities pertinent to storm water management; they do not include complete site details and contours. The figures are referenced throughout Sections 3.1 through 3.6.

3.1 Receiving Waters and Outfall Descriptions

Annual precipitation in the region is approximately 16 to 20 in. (EA Engineering Service and Technology, Inc., 1993). Consequently, storm water flows tend to accumulate in wetland areas on Base and subsequently evaporate or percolate into the soil. However, in the event of a heavy rain event, storm water will flow off Base via Zorro Creek, unnamed tributaries, and sheet flow. Laughlin AFB is divided into four main drainage areas (Drainage Areas 1, 2, 3, and 4). The storm water drainage paths for each drainage area are described below.

Drainage Area 1: As indicated in Figure A3-1, most of the flightline and the majority of the industrial areas on Base are located in Drainage Area 1. Storm water is collected through a storm water drainage system that includes culverts, ditches, and underground storm sewers. Generally, runoff from the industrial areas is diverted to a large, grassy channel that runs along 2nd Street (see Figure A3-2). Storm water runoff from the flightline is diverted to an underground storm sewer that runs under 1st Street, parallel to the storm water channel. This storm line empties into the channel approximately 400 ft northwest of the Fire Training Area.

The channel flows across the Base in a grassy swale and discharges through Outfall 001 to an unnamed tributary of Sacatosa Creek at a point about 75 ft southeast of the facultative sewage treatment ponds, which lies along the southern property line. Effluent discharged from the sewage treatment pond also contributes to this unnamed tributary, combining with the storm water flows at a point approximately 200 ft from the Base property line.

Drainage Area 2: Drainage Area 2 includes three sub-areas (i.e., 2A, 2B, and 2C) with industrial activity that discharge on Base (within Drainage Area 2) through three separate outfalls. Storm water discharges from each sub-drainage area, as well as storm water flows from the remainder of Drainage Area 2, accumulate in a wetland area at the west end of the Base. The wetland area drains directly into Zorro Creek through Outfall 002.

Drainage Area 3: Drainage Area 3 primarily includes storm water runoff from the Base housing areas and the golf course, as well as the Base hospital and commercial areas. Storm water in Drainage Area 3 flows through the golf course ponds and accumulates in a wetland area at the south end of the Base that flows off-Base through Outfall 003.

Drainage Area 4: The majority of Drainage Area 4 is open land with the exception of a portion of the runways. Since few exposure areas are located in Drainage Area 4, storm water runoff from this area is not subject to permitting. During heavy rain events, storm water flows leave the Base from Drainage Area 4 via sheet flow that can contribute other Drainage Areas and to Sacatosa Creek to the east, or Zorro Creek to the north.

The boundaries of the drainage areas and sub-drainage areas and the outfall locations are presented in Figure A3-1. Table 3-1 shows the drainage areas that contribute storm water flow to each outfall and the outfall designation.


Table 3-1


Drainage Areas and the Outfall Relationship

Designation	Outfall		Contributing Drainage Area(s)
	Coordinates		
	Latitude	Longitude	
001	29°20'11"N	100°46'35"W	1
002	29°21'31"N	100°48'38"W	2
02A (Outfall A)	29°21'41"N	100°47'46"W	2A
02B (Outfall B)	29°21'41"N	100°47'46"W	2B
02C (Outfall C)	29°21'41"N	100°47'46"W	2C
003	29°20'09"N	100°47'23"W	3
Sheet Flow	-	-	4

3.1.1 Receiving Waters

During heavy rain events, storm water flows from the four main drainage areas leave the Base via Outfalls 001, 002, and 003 or by sheet flow. Flow through the three main outfalls (001, 002, and 003) eventually flow into the Rio Grande via Sacatosa Creek, Zorro Creek, or unnamed tributaries, respectively. The sub-drainage area outfalls (Outfalls 02A 02B, and 02C) within Drainage Area 2 accumulate in a wetlands area that empties into Zorro Creek through Outfall 002. Not all outfalls are required sample collection points, they are listed here to indicate specific points of departure for storm water from main industrial areas (DRMO and the POL yard). The drainage paths for discharges for each of the outfalls is detailed below.

 Outfall 001: Storm water from Drainage Area 1 flows directly into an unnamed tributary that empties into Sacatosa Creek approximately 3.75 miles downstream from the Base property line. Sacatosa Creek then flows into the Rio Grande, which flows to the Gulf of Mexico.

 Outfall 002: Storm water flows, including discharges from sub-Drainage Areas 2A, 2B, and 2C, from Drainage Area 2 accumulate in a wetland area along the western property line. The wetland contributes flows directly to

Zorro Creek, which intersects the northwestern corner of the Base (see Figure A3-1). Zorro Creek flows into the Rio Grande, which flows to the Gulf of Mexico.

- ✍ Outfall 02A: Storm water flows from the hazardous material storage area in Drainage Area 2A is discharged through Outfall 02A, and subsequently accumulates in the wetland area along the western property line in Drainage Area 2 before leaving the Base via the drainage path associated with Outfall 002.
- ✍ Outfall 02B: Storm water flows from the DRMO storage yard in Drainage Area 2 B is discharged through Outfall 02B, and subsequently accumulates in the wetland area along the western property line in Drainage Area 2 before leaving the Base via the drainage path associated with Outfall 002.
- ✍ Outfall 02C: Storm water flows from the POL storage area in Drainage Area 2C is discharged through Outfall 02C, and subsequently accumulates in the wetland area along the western property line in Drainage Area 2 before leaving the Base via the drainage path associated with Outfall 002.
- ✍ Outfall 003: Storm water from Drainage Area 3 accumulates in a wetland area toward the south end of the Base. The wetland area discharges to an unnamed tributary that flows to the Rio Grande. The Rio Grande then flows to the Gulf of Mexico.

The following U.S. Geological Survey quadrangle maps of Texas illustrate these drainage paths: Del Rio Southeast, Texas; Del Rio Northeast, Texas; Mud Creek South, Texas; and Mud Creek North Quadrangle, Texas.

3.1.2 Outfall Descriptions

The current condition of each of the four outfalls is described below. This information was derived from a visual inspection of the outfalls, as well as interviews with Base personnel and a document review. The location of each outfall is as indicated on Figure A3-1.

Outfall 001: This outfall is located at the southeastern end of the Base approximately 75 ft of the easternmost sewage treatment pond and leads to an unnamed tributary. The outfall was upgraded in FY96 and now consists of a weir and a sampling platform. During heavy rains, storm water flows leave the Base and discharge directly into this unnamed tributary that flows into Sacatosa Creek. Drainage to this Outfall is from, a portion of the flightline and the majority of the industrial areas on Base.

Outfall 002: This outfall is located along the western Base property line, approximately 1,100 ft south of the Southern Pacific Railroad tracks. Storm water in Drainage Area 2 accumulates in a wetland area that drains directly to Zorro Creek through Outfall 002 during heavy rain events. Drainage to this outfall occurs mainly via the natural contours of the land (i.e., as opposed to constructed ditches or culverts) by sheet flows that result in the accumulation of storm water in a wetlands area located at the western portion of Drainage Area 2. The outfall is essentially a wetland area and not an obvious point of departure for storm water.

Outfall 02A: This outfall is the outlet of the hazardous material storage area (Bldg. 2026) sump that discharges on Base, within Drainage Area 2. The outfall is located in a densely vegetated area approximately 50 ft from Bldg. 2026. Discharges to this outfall flow toward the wetlands area on the northwestern side of the Base that empties into Outfall 002 during heavy rain events. Drainage to this outfall includes storm water that flows into the grated drain (connected to the sump) that lies near the entrance to Bldg. 2026.

Outfall 02B: Outfall 02B is a heavily eroded channel with sparse vegetation that discharges on Base within Drainage Area 2. Drainage to this outfall includes storm water runoff from the DRMO storage yard (Bldg. 2025). Discharges to this outfall flow toward the wetlands area on the northwestern side of the Base that empties into Outfall 002 during heavy rain events.

Outfall 02C: This outfall is a culvert that discharges to the wetlands area on the northwest side of the Base, within Drainage Area 2. Drainage to this outfall includes runoff from the POL satellite accumulation area, JP-8 offloading area, and the industrial area bounded to the

northeast by Liberty Drive, to the northwest by Arkansas Avenue, to the southwest by 4th Street, and to the southeast by Colorado Avenue. Discharges to this outfall flow toward the wetlands area on the northwestern side of the Base that empties into Outfall 002 during heavy rain events.

Outfall 003: Outfall 003 is near a wetland area located at the southern edge of the Base approximately 2,800 ft west of the westernmost sewage treatment pond. Drainage Area 3, comprised of the southwestern part of the Base, drains to Outfall 003 through a combination of storm sewers, culverts, natural contours of the land, and sheet flow.

3.1.3 Drainage Areas Contributing to Outfalls

Storm water flows and quality can be affected by the physical characteristics of drainage areas and the specific industrial activities conducted in these areas. In general, drainage areas that include a relatively high percentage of paved surface area (e.g., roads and parking lots) and serve significant industrial activities have the highest potential for affecting storm water flows and quality. This is because industrial activities may result in the release of pollutants, which in turn could be carried off by the increased runoff from paved (and therefore impervious) surface areas.

Table 3-2 summarizes the percentage of impervious surface area for two of the four drainage areas. The percentage of impervious surface area indicates how much storm water could be expected to drain from the area. Generally, areas with a high percentage of paved surfaces tend to contribute a greater degree of runoff to storm water flows than do areas with a lower percentage of impervious surface area.

Table 3-2 also summarizes the principal industrial activities conducted in each drainage area. As indicated in this table, Drainage Areas 1 and 2 have the greatest potential for affecting storm water flows and quality since they have a sizable area, a high percentage of impervious surface area, and since significant industrial activities are performed in both areas.

Table 3-2**Summary of Drainage Area Activities/Impervious Area**

Drainage Area		Total Area Drained (acres)	Impervious Area (acres)	Percent Impervious	Industrial Activities
1		1,029	214	21	Aircraft Maintenance/Washing Aircraft Fuel Storage/Distribution Aircraft Refueling Aircraft Support Equipment Maintenance Vehicle Maintenance Wastewater Treatment
2	2A	0.15	0.08	56	Hazardous Waste Accumulation Point
	2B	2.80	0.29	10	Recycling
	2C	27.4	6.3	23	Aircraft Fuel Storage/Distribution Aircraft Support Equipment Maintenance
	Remainder	Unknown	Low	Low	Vehicle Maintenance/Refueling/Washing
3		816	Low	Low	Golf Course and Golf Course Maintenance
4		1,645	Low	Low	Aircraft Support Equipment Maintenance

Therefore, storm water discharges from Outfalls 001 and 002 are of particular concern.

Information concerning the percentage of impervious cover for the several outfalls was derived from the *Storm Water Report: Laughlin AFB, Del Rio, Texas*, prepared by EA Engineering, Science, and Technology, Inc., March 1993.

Although the exact percentages of impervious area for Drainage Areas 3 and 4 are unknown, they are relatively low. Drainage Area 3 is primarily comprised of golf course grounds and residential housing. Drainage Area 4 is mainly open land on the northeast side of the Base.

3.2 Materials Inventory

This section inventories significant materials by drainage area and location. EPA's *Storm Water Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices* defines significant materials as including, but not limited to:

"...raw materials; fuels; materials such as solvents, detergents and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); any chemical the facility is required to report pursuant to Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA); fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have a potential to be released with storm water discharges."

When such significant materials are exposed to storm water runoff, contaminants may be carried to a receiving stream with the storm water flow. Therefore, identification of these materials helps to determine where a potential for contamination exists. Table 3-3 provides a list of the significant materials identified in the Laughlin AFB site survey, their location, and quantity stored.

In addition to the materials included in the table, pallets and uncontrolled dumpsters (i.e., not covered/sealed, corroded), parking areas, runways, and construction areas are considered to be significant materials that could potentially affect storm water quality. A general evaluation of these materials was performed during the site visit and is detailed in Section 3.3.

3.3 Materials Handling Practices and Potential Releases

The materials handling practices discussed in this section relate to the materials inventory as described in Section 3.2. These practices include storage methods and steps taken to avoid potential releases into storm water drainage flows. In the remainder of this plan, areas with

Table 3-3A
Inventory of Significant Materials^{a,b}

Building Associated with Exposure Area	Area Description	Materials ^c	Amount ^d
9	Vehicle Refueling and Maintenance Shop	Oil (W) JP-8 (W) Antifreeze (P)	1 1 1
15/18/19	Engine Test Cell and Trim Pads	JP-8 (P) JP-8 (W) BB 3100 Cleaner (P) Aircraft Soap (P) 7808 Oil (P) 7808 Oil (W) WD-40 Cleaning (P)	4,000 gal 1 1 2 2 1 1
20/21	Pump Station/Refueling Area	JP-8 Trucks Diesel Fuel Truck Unleaded Fuel Truck	16 trucks 1 truck 1 truck
44	Central Used Oil Collection Point	Oil (W) Hydraulic Fluid (W) PD-680 (W) Empty Drums	varies varies varies varies
47	Grounds Maintenance	Oil (W) Diesel Fuel (P) Unleaded Gas (P) Flammable Material Storage Locker	1 560 gal 560 gal 1
50	T-38 Maintenance Accumulation Area	NOT IN USE	

Table 3-3A

(Continued)

Building Associated with Exposure Area	Area Description	Materials ^c	Amount ^d
51/57/31600	Corrosion Control: Sheep Shed	JP-8 Spill Pads	1
		JP-8 (W)	1
		Fuel Filters (W)	1
		Alodine Wastewater (W)	2
		Wall Filters	3
		MEK/Paint	3
		Barrier Paper	1
		Bead Blast Media	4
	Corrosion Control: Material Storage	Aircraft Paint Thinner (P)	1
		MEK (P)	1
		Corrosion Removing Compound (P)	3
		Aircraft Soap (P)	7
55	Open Storage	Varies	Varies
68	Chemical Cleaning and Propulsion Shop: South Accumulation Point	Calibration Fluid	1
		PD-680 (P)	1
		1010 Oil (P)	2
		Carbon Remover (P)	4
	North Accumulation Point	JP-8 (W)	1
		Turbine Oil (W)	1
		PD-680 (W)	1
91	Service Station	Oil (W)	1
100	Civil Engineering	PD-680 (W)	1
		Water Proofer (P)	Varies
		Paint Chips (W)	1
109/2100	POL: Satellite Accumulation Area	Benzene Contaminated Spill Material	1
	POL: JP-8 Offloading Area	JP-8 AST	420,000 gal.
		JP-8 AST	210,000 gal.
		JP-8 AST	210,000 gal.
		JP-8 AST (inactive)	-

Table 3-3A

(Continued)

Building Associated with Exposure Area	Area Description	Materials ^c	Amount ^d
125	Power Production Accumulation Point (West of Bldg. 125)	Oil (W) Citrikleen (P) USRA Super Plus SAE4 40W AA517M Oil (P) 30W AA221J (P) Waste Paint 1,1,1-Trichloroethane Waste Lube Antifreeze	1 1 1 1 1 1 1 Varies
129	Entomology	All materials stored inside building	-
131	Motor Pool	Oil (P) Engine Oil (W) Hydraulic Fluid (W) Antifreeze (W)	5-10 1 1 1
206	Aerospace Ground Equipment (AGE)	7808 Oil (W) Engine Oil (W) Hydraulic Fluid (W)	1 1 1
209	Aircraft Washrack	Citrikleen (P) 9:1 Citrikleen Dilution (P)	2 1
328	Flight Simulator (Storage area on east side)	Hydraulic Fluid (W) Flammable Material Storage Locker	1 1
414	T-37 Maintenance Hangar Accumulation Area	JP-8 (W) Oil (W) Oil (P) Hydraulic Fluid (W) Hydraulic Fluid (P)	1 1 360 quarts 1 70 quarts
506	T-37 Washrack	Citrikleen (P) 9:1 Citrikleen Dilution (P)	1 1
507	T-1A Combs	JP-8 (W) Oil (W) Alodine Contaminated Rags	1 1 1
508	T-1 Maintenance Hangar	JP-8 (W) JP-8 Filters (W) Oil (W) Compressor Oil (W) Hydraulic Fluid (W) Oil Contaminated Paper (W)	1 1 1 1 1 1

Table 3-3A
(Continued)

Building Associated with Exposure Area	Area Description	Materials ^c	Amount ^d
525	Auto Hobby Shop: Waste Oil Shed	Oil (W)	350 gal.
	Auto Hobby Shop: Hazardous Waste Accumulation Area	Gas (W) Brake Fluid (W) Gas Filters (W) A/C Flush Oil	1 1 1 1
595	Golf Course Maintenance Area	5-gal Containers of Oil (W) Diesel Fuel (P) Unleaded Gas (P)	2 500 gal. 500 gal.
670	Control Tower: AGE Fueling Area	JP-8 (P) Diesel Fuel (P)	560 gal. 560 gal.
2025	DRMO Storage Yard	Oil (W) Scrap Metal Scrap Plastic Equipment (washing machines, refrigerators, etc.)	9 - - -
2026	Hazardous Waste Storage	All Materials Stored Inside Bldg.	-
2071	Check Point Area	Benzene Contaminated Water (W) Motor Oil (P) Cleaning Soap (P)	- 1 1
2109	Government Vehicle Service Station	Oil (P) Gas (P) Diesel Fuel (P)	AST AST AST

^a Inventory data subject to change based on process needs

^b Material handling practices and industrial activities with each area that could impact storm water flows/quality are detailed in section 3.3

^c Waste/Product designations: (P) - Product (W) - Waste

^d Units are as 55-gal. Drums unless otherwise specified

Table 3-3B
Inventory of Significant Materials ^{a,b}

Building Associated with Exposure Area	Area Description	Material(s) ^c	Amount ^d
9	Vehicle Refueling and Maintenance Shop	Oil (W) JP-8 (W) Barrels of Crushed Fuel Filters and Oil Filters (W) Oil (P) Antifreeze (P)	1 1 1 1 1
15/18/19	Engine Test Cell and Trim Pads	JP-8 (P) PD-680 (P) 1010 Oil (P) WD-40 Cleaning (P)	4,000 gal. 1 2 1
20/21	Pump Station/Refueling Area	JP-8 Trucks	16 trucks
44	Central Used Oil Collection Point	Oil (W) Hydraulic Fluid (W) PD-680 (W) Empty Drums	varies varies varies varies
47	Grounds Maintenance	Oil (W) Diesel Fuel (P) Unleaded Gas (P) Flammable Material Storage Locker	1 560 gal. 560 gal. 1
50	T-38 Maintenance Accumulation Area	JP-8 (W) Oil (W) Hydraulic Fluid (W) Reusable JP-8	1 1 1 1
51/57/31600	Corrosion Control: Sheep Shed	JP-8 Spill Pads JP-8 (W) Fuel Filters (W) Alodine Wastewater (W) Wall Filters MEK/Paint Barrier Paper Bead Blast Media	1 1 1 2 3 1 1 1
	Corrosion Control: Material Storage	Aircraft Thinner (P) MEK (P) Corrosion Removing Compound (P) Aircraft Soap (P)	1 1 1 7
55	Open Storage	Varies	Varies

Building Associated with Exposure Area	Area Description	Material(s) ^c	Amount ^d
a 68	Chemical Cleaning and Propulsion Shop Accumulation Point South	Calibration Fluid PD-680 (P) 1010 Oil (P) Carbon Remover (P)	1 1 2 4
	Accumulation Point North	JP-8 (W) Turbine Oil (W) PD-680 (W)	1 1 1
91	Service Station	Oil (W)	1
100	Civil Engineering	PD-680 (W) Water Proofer (P) Paint Chips (W)	1 Varies 1
109/2100	POL: Satellite Accumulation Area	Benzene Contaminated Water Spill Material Benzene Contaminated Spill Material	1 1
	POL: JP-8 Offloading Area	JP-8 AST JP-8 AST JP-8 AST JP-8 AST (inactive)	420,000 gal. 210,000 gal. 210,000 gal. -
125	Power Production Accumulation Point (West of Bldg. 125)	Oil (W) Citrikleen (P) USRA Super Plus SAE4 40W AA517M Oil (P) 30W AA221J (P) Waste Paint 1,1,1-Trichloroethane Waste Lube Antifreeze	1 1 1 1 1 1 1 Varies
129	Entomology	All materials stored inside building	-
131	Motor Pool	Oil (P) Engine Oil (W) Hydraulic Fluid (W) Antifreeze (W)	5-10 1 1 1
206	Aerospace Ground Equipment (AGE)	7808 Oil (W) Engine Oil (W) Hydraulic Fluid (W)	1 1 1
209	Aircraft Washrack	Citrikleen (P) 9:1 Citrikleen Dilution (P)	2 1
328	Flight Simulator (Storage Area on East Side)	Hydraulic Fluid (W) Flammable Material Storage Locker	1 1
414	T-37 Maintenance Hangar Accumulation Area	JP-8 (W) Oil (W) Hydraulic Fluid (W) Oil (P)	- - - -
506	T-37 Aircraft Washrack	Citrikleen (P) 9:1 Citrikleen Dilution (P)	1 1

Building Associated with Exposure Area	Area Description	Material(s) ^c	Amount ^d
507	T-1A Combs	JP-8 (W) Hydraulic Fluid (W) Sealer/Preservative (W) Alodine Contaminated Rags	1 1 1 1
508	T-1 Maintenance Hangar	JP-8 (W) JP-8 Filters (W) Oil (W) Compressor Oil (W) Hydraulic Fluid (W)	1 1 1 1 1
525	Auto Hobby Shop: Waste Oil Shed	Oil (W) Oil (W)	3 350 gal.
	Auto Hobby Shop: Hazardous Waste Accumulation Area	Gas (W) Brake Fluid (W)	1 1
595	Golf Course Maintenance Area	5-gal Containers of Oil (W) Diesel Fuel (P) Unleaded Gas (P)	2 500 gal. 500 gal.
670	Control Tower: AGE Fueling Area	JP-8 (P) Diesel Fuel (P)	560 gal. 560 gal.
2025	DRMO Storage Yard	Oil (W) Scrap Metal Scrap Plastic Equipment (washing machines, spare vehicles, etc.)	9 - - -
2026	Hazardous Material Storage	All materials stored inside building	-
2071	Check Point Area	Benzene Contaminated Water (W) Motor Oil (P) Cleaning Soap (P)	- 1 1
2109	Government Vehicle Service Station	Oil (P) Gas (P) Diesel Fuel (P)	AST AST AST

^aInventory data subject to change based on process needs.

^bMaterial handling practices and industrial activities associated with each area that could impact storm water flows/quality are detailed in Section 3.3.

^cWaste/Product designation: (W) = Waste; (P) = Product.

^dUnits are as 55-gal drums unless otherwise specified.

AGE - Aerospace ground equipment

AST - Aboveground storage tank

DRMO - Defense reutilization and marketing office

MEK - Methyl ethyl ketone

POL - Petroleum/oil/lubricant

the potential to contaminate storm water (e.g., outdoor storage areas, industrial activity areas) are referred to as *exposure areas*. Potential releases from specific exposure areas are detailed in this section.

In addition, the following general activities (irrespective of location) are important to note in assessing potential releases from areas exposed to storm water flows:

- ✍ General material handling measures;
- ✍ Application of herbicides/pesticides/insecticides;
- ✍ Street sweeping;
- ✍ Drum tracking and labeling practices;
- ✍ POL spills, leaks, and drip pan use;
- ✍ Cross-connection of sewers; and
- ✍ Structural controls.

Each of these is discussed below, followed by details on the specific exposure area listed in Table 3-4.

3.3.1 General Materials Handling Measures

Most outside material storage areas at Laughlin AFB are controlled to prevent or reduce the risk of storm water runoff contamination. These controls include:

- ✍ Curbing, dikes, or berms around storage areas;
- ✍ Covered or enclosed material storage areas;
- ✍ Spill containment pallets for material storage drums; and/or
- ✍ Drip pans underneath drum spouts.

A general survey of the Base showed that dumpsters used for storing non-hazardous solid waste outside industrial and non-industrial buildings are kept covered and are replaced with new or refurbished dumpsters when they become corroded.

Specific BMPs for materials handling are described in greater detail in Section 4.

3.3.2 Application of Herbicides/Pesticides/Insecticides

BMPs are employed in the handling, application, and choice of herbicides/pesticides/insecticides. These practices are discussed in detail in Section 4.0.

3.3.3 Street Sweeping

A wet sweeper is used to sweep streets, parking lots, flightline, and runways according to a weekly schedule to prevent the accumulation of solids that could affect storm water quality. Swept material collected in the hopper of the wet sweeper is stored in bins in a storage yard located approximately 2,500 ft from the western property line, at the end of a dirt/gravel road. This storage area is maintained by Civil Engineering (CE). Dump trucks are used to collect the swept material from the storage bins and transport it to a landfill off-Base.

Areas where vehicles and equipment generally remain stationary have the potential to collect leaking motor fluids (motor oil, gasoline, etc.) and accumulate solid material (dirt, mud, organic debris). This results in potential contamination (i.e., introduction of man-made constituents and/or increase in suspended solids) of storm water. This vehicle-associated contamination necessitates regular cleaning/maintenance of vehicles and parking areas to minimize the potential for storm water contamination. Section 4.0 addresses current street sweeping BMPs implemented at Laughlin AFB.

3.3.4 Drum Tracking and Labeling Practices





Drums at Laughlin AFB are labeled to indicate the drums' contents to allow for quick and proper response to releases of stored materials that could affect human safety, the environment, or storm water discharges. A computer waste drum tracking system is employed to track the generation, storage, and disposal of wastes (e.g., RCRA waste drums). The system tracks drums by barrel numbers, which are assigned to all waste drums. Information from the completed Form 1348-1 ~~Disposal~~ Turn-In Document that accompanies each waste drum transferred to the DRMO is entered into the computer tracking system.

3.3.5 POL Spills, Leaks, and Drip Pan Use

Rainwater collected in secondary containment areas for POL product and waste storage is visually inspected before the water is drained. If contaminants are suspected or a sheen is present, the water is analyzed before it is drained. Generally, all tanks and storage containers are maintained using a regular inspection and repainting schedule. Drip pans are also used as necessary to contain minor leaks from fuel lines, valves, and drains. These measures are practiced to reduce the potential for releases to storm water flows.

3.3.6 Cross-Connection of Sewers

The AETC Environmental Reveal Unit has conducted an Inflow/Infiltration (I/I) and Cross-Connection Study (January to March 1993) of the sanitary sewer system to identify cross-connections. The tests performed to isolate the causes of I/I included:

-  Smoke testing;
-  Dye testing;
-  Line cleaning and television inspection of selected sewers;
-  Flow monitoring;

- ✍ Manhole inspection; and
- ✍ Night flow isolations.

The results from these tests showed that no cross-connections were identified between the sanitary and storm water sewers. According to Base personnel, all oil/water separators are connected to the sanitary system. However, several floor drains were reported to discharge into the storm system, including floor drains in Bldgs. 91, 206, 210, 219, 404, and 414. Additionally, a 1995 memo (Appendix D) states that there is one cross connect from the sanitary sewer to the storm system, but does not specify the location. The report from the Reveal Unit is included as Appendix D.

3.3.7 Runoff Management Practices

Most outside material storage areas at Laughlin AFB are controlled to prevent or reduce the risk of storm water runoff contamination through runoff management practices. These practices include earthen or concrete berms around all tanks, diked exposure areas, storage of materials inside buildings, and a retention/evaporation pond. The curbing or dikes around storage areas are provided to contain spills and/or rainwater off-spray that impacts storage tanks, drums, and bins. Oil/water separators to are used prevent oil from reaching the sanitary sewer system. Most outdoor storage areas have a roof to keep rainwater from impacting drums directly.

In addition, spill control measures are implemented as soon as a spill is discovered to prevent the material from entering storm drainage channels. These spill control measures are site-specific and are detailed in the Laughlin AFB Spill Prevention and Response (SPR) Plan.

3.3.8 Specific Exposure Areas

The material handling practices and/or industrial activities conducted at various exposure areas can affect the storm water quality. Table 3-4 summarizes the industrial activities that can impact storm water quality and the associated buildings.

Table 3-4

Industrial Activities Associated With Specific Buildings

Industrial Activity	Associated Building(s)
Aircraft Maintenance/Refueling/Washing	Bldg. 50 - T-38 Maintenance Accumulation Area Bldg. 53 - Aircraft Fuel System Maintenance Bldg. 209 - Aircraft Washrack Bldg. 414 - T-37 Maintenance Hangar Accumulation Area Bldg. 506 - T-37 Aircraft Washrack Bldg. 507 - T-1A Combs Bldg. 508 - T-1 Maintenance Hangar Accumulation Area
Aircraft Fuel Storage/Distribution	Bldgs. 15/18/19 - Test Cell and Trim Pads Bldgs. 20/21 - Pump Station/Refueling Area Bldgs. 109/2100 - POL
Aircraft Support Equipment Maintenance	Bldg. 206 - AGE Bldg. 670 - Control Tower: AGE Refueling Area Bldg. 2071 - Check Point Area
Hazardous Waste Accumulation Point	Bldg. 525 - Auto Hobby Shop Bldg. 2026 - Hazardous Material Accumulation Area
Recycling	Bldg. 44 - Central Used Oil Collection Point Bldg. 525 - Auto Hobby Shop (Antifreeze recycling) Bldg. 2025 - DRMO Storage Yard
Vehicle Maintenance/Refueling/Washing	Bldg. 9 - Vehicle Refueling and Maintenance Shop Bldg. 47 - Grounds Maintenance Bldg. 91 - Service Station Bldg. 125 - Power Production Accumulation Point Bldg. 131 - Motor Pool Bldg. 525 - Auto Hobby Shop Bldg. 2109 - Government Vehicle Fueling Area
Wastewater Treatment	Bldg. 1004 - Sewage Treatment Facility

The following subsections detail the material handling methods and potential releases for the material storage areas, which are identified by their relative proximity to adjacent

buildings listed in Table 3-3. These are exposure areas that can be affected by rain events, and thus can affect storm water discharges.

Bldg. 9–Vehicle Refueling and Maintenance Shop

Material Handling: Materials are stored in grounded drums in a covered bermed (approximately 20 x 6 x 1 ft) area that is enclosed by three walls (i.e., open on one side). Drip pans are provided for the new 55-gal. product drums (oil and antifreeze) that are stored horizontally on racks. The waste materials from the shop (engine oil, waste JP-8, and antifreeze) are stored upright and have locked drum funnels. Small drums (approximately 20 gal.) are used within the building and manually transported to the SAP for containment. The following conditions are also present (as noted during the site survey):

- ✍ *Inspection:* If water accumulates in the bermed area, a lab technician is called to visually inspect the water for sheen or color change before it is drained through the containment drain. The containment valve is locked.
- ✍ *Drainage:* The drain in the building is connected to an oil/water separator on the east side of the building. CE collects the oil from the separator; the separator discharges to the sanitary sewer.

Potential Releases: The potential for releases is minimal, since the area is covered, enclosed, and is confined. The use of drip pans, locked drum funnels, the locked containment valve, personnel training, and good housekeeping practices also reduces the potential for storm water contamination. If a spill occurred during transfer, it could be contained on the pavement (spill kits are available).

Bldgs. 15/18/19–Test Cell and Trim Pads

Four areas are associated with Bldgs. 15/18/19: a JP-8 storage tank east of Bldg. 15 (Test Cell), oil/water separators for Bldgs. 15 and 19, a material storage area west of Bldg. 18, and another material storage area east of Bldg. 18 (see Figure A3-2). The material handling practices and potential releases from each are addressed below.

1. **JP-8 Storage Tank**

Material Handling: A 4000-gal. JP-8 tank is stored east of Bldg. 15 (Test Cell) in an uncovered 2-ft bermed area that measures 12 x 20 ft, yielding a containment volume of 480 ft³, or 3590 gal. An underground fuel line runs from the tank to the Test Cell. The area is surrounded by grass on three sides and pavement on the fourth. The following conditions are also present (as noted during the site survey):

- ✍ *Containment Valve:* The unlocked containment valve drains to the grassy area opposite from the paved side of the Test Cell.
- ✍ *Inspection:* Water that accumulates in the bermed area is visually inspected for sheen or color change before it is drained through the containment valve to the grassy area.

Potential Releases: The potential for releases exists, since the containment structure may only have a capacity of 3590 gal. Additionally, the containment valve is unlocked; therefore, it is accessible to personnel without proper authorization, thereby increasing the risk of releases.

2. **Test Cell (Bldg. 15) and Hush House (Bldg. 19)**

Material Handling: Activities conducted in Bldgs. 15 and 19 drain to oil/water separators located east of each respective building as follows:

- ✍ *Oil/Water Separator (west of Bldg. 15):* The drains inside Bldg. 15 are connected to the oil/water separator west of the building (see Figure A3-2). After testing, fuel (approximately 1 cup) from the engines is drained to the floor and into the oil/water separator. The oil/water separator is inspected once a month. A small amount of used oil is also generated and then placed in a tank inside the cell. The contents of this tank are pumped out to a 55-gal. drum on the west side of the building.
- ✍ *Oil/Water Separator (west of Bldg. 19):* Small amounts of fuel drain out of aircraft when the engines are shut down. The fuel flows to the drain in the center of the floor in Bldg. 19 (Hush House), which is connected to the oil/water separator west of the building (see Figure A3-2). A small amount of used oil is also generated and then placed in a tank inside the cell. The contents of this tank are pumped out to a 55-gal. drum on the east side of the building.

Potential Releases: The oil/water separator west of Bldg. 15 does not have the capacity to contain combined discharges of heavy rainfall and discharges from Bldg. 15.

3. **Material Storage Area: West of Bldg. 18**

Material Handling: Grounded product drums are stored horizontally on a raised stand in an uncovered 6-in. bermed area that measures 4 x 14 ft, yielding a containment volume of 28 ft³, or 209 gal. These drums contain cleaning compound, PD - 680, and WD-40. Drip pans are not provided. The following conditions are also present:

✍ *Material Transfer:* Base personnel fill up buckets with the material products stored in the area and carry the buckets inside the Test Cell. Empty drums in the bermed area are picked up by Supply and replaced with a full product drum.

✍ *Drainage:* The area drains onto a paved area as well as a grassy area.

Potential Releases: The capacity of the bermed area offers sufficient containment to minimize the potential for releases from the area, but the containment valve is unlocked. Additionally, spills and minor leaks are possible within the bermed area, since drip pans are not provided. Releases are also possible from the transfer of materials, but the potential for runoff is low, since 55 gal. is the maximum volume that could be released.

4. **Material Storage Area: East of Bldg 18**

Material Handling: Two drums (B&B 3100 and 1010 Oil) are stored vertically on wheeled platforms in a shed on the east side of Bldg. 18. The shed is enclosed (covered and with walls) to minimize contact with rain. The platforms are wheeled into the Test Cell when needed.

Potential Releases: Releases are not likely as a result of the storage practices employed, since the area is enclosed. However, releases are possible from transfer of materials using the wheeled platform.

Bldgs. 20/21–Pump Station/Refueling Area

Material Handling: The pump station (Bldg. 20), which pumped JP-8 from the three JP-8 ASTs at Bldg. 2100 into six 25,000-gal. underground storage tanks (USTs) adjacent to Bldg. 20, was taken out of service and removed in 1995. The USTs also were removed.

The new transfer system utilizes the large tanker trucks to transfer fuel to the flightline directly from the large ASTs at the POL.

- ✍ *Water Collection:* A bowser is used to drain the sumps from the trucks periodically. Generally, the amount of water collected is minimal, and such drainage is not often required.
- ✍ *Operating Checklist:* An operating checklist is maintained for all fuel transfer operations conducted at this location.

Potential Releases: The potential for releases has been greatly reduced, since the pump station has been replaced by the new fuel transfer system. The worst-case spill scenario would be the rupture of a tanker truck. A spill in this area would largely remain on the asphalt parking lot, but might travel into the grassy area to the south/southwest. However, a spill, although very unlikely, could occur anywhere along the route from the POL to the flightline.

Bldg. 44–Central Used Oil Collection Point

Material Handling: Drums of used oil and hydraulic fluid are stored on wooden pallets in a bermed, uncovered storage area that is enclosed by 4-ft walls. Hazardous materials are stored within Building No. 44. The bermed area measures 21 ft x 1400 ft x 2 in., which yields a containment volume of 4,900-ft³, or 36,650 gal. The end of the storage area is sloped up to provide access to trucks and forklifts. The following conditions also exist:

- ✍ *Material Transfers:* Materials are brought into the bermed storage area via a forklift. Materials may also be repositioned within the area. Used oil drums are emptied by a contractor who pulls a truck along side the bermed area and siphons out the used oil drums. Full waste drums are loaded onto pallets and transferred to an accumulation area with a forklift; these drums are replaced with empty drums that are stored in a nonbermed area.
- ✍ *Inspection:* The storage area is inspected each Monday. When water accumulates in the bermed area it is visually inspected for sheen or color change before it is drained through two drainage valves. The valves are secured with padlocks and drain to a large ditch south of the bermed area.

Potential Releases: The potential for releases is minimal, since the area is contained and enclosed (with walls). However, releases are possible from the transfer of materials to and from the area by contractors and Base personnel. Mishandling of drums could lead to spills; some of the empty drums are not labeled. A spill kit is available to accommodate up to a 55-gal. spill.

Bldg. 47–Grounds Maintenance

Material Handling: Materials are stored in an uncovered, 1-ft bermed area that measures 12 x 18 ft, yielding a containment volume of 216 ft³, or 1615 gal. The materials include two, raised 560-gal tanks (diesel fuel and unleaded gas) that are grounded, used oil drums stored on wooden pallets, and a flammable storage locker containing aerosol paint cans. A spill kit is provided near the bermed area, and a fire extinguisher is just outside the bermed area. The following conditions also exist:

- ✍ *Inspection:* The area is inspected daily. Water that accumulates in the bermed area it is visually inspected for sheen or color change before it is drained onto the ground.
- ✍ *Containment Valve:* The containment valve is unlocked.
- ✍ *Washrack:* The washrack located next to Bldg. 47 drains to an oil/water separator. It is used by Grounds Maintenance and Security Police to rinse dirt off of vehicles. Generally, detergents are not used in the process although they have been used by Maintenance. AGE uses a steam cleaner to remove dirt, and is the principal user of the washrack.
- ✍ *Used Oil Drum:* A funnel is not provided for the used oil drum.

Potential Releases: The containment capacity can contain up to 1615 gal. of material and/or rainwater; therefore, the potential for releases from a tank rupture is minimal. If a spill were to occur, a spill kit is provided near the bermed area. However, the containment valve is unlocked and therefore accessible to personnel without proper authorization. Spills may occur during fueling, which would take place outside of the berm on the pavement. The pavement in this area slopes toward a storm water drainage ditch, which lies south of the area. Also, without a funnel, spills during transfers to the used oil drum are more likely to occur within the bermed area.

Bldg. 50–T-38 Maintenance Accumulation Area

Material Handling: All the drums are grounded and stored on wooden pallets in a 6- to 8-in. bermed area that is 12 ft x 5 ft, yielding a containment volume of approximately 35 ft³ or 262-gal. The area is currently enclosed with walls and a roof. The following conditions also exist:

- ✍ *Inspection:* Daily inspection of the area includes completion of inspection sheets, which are checked every Friday. Water that accumulates in the bermed area it is visually inspected for sheen or color change before it is drained onto the adjacent parking lot.

- ✍ *Funnels:* Locked funnels are provided for the drums.
- ✍ *Containment Valve:* The containment valve is locked to prevent access by unauthorized personnel.
- ✍ *Spill Kit:* Spill pads are provided in the area.

Potential Releases: The 262-gal. containment capacity minimizes the potential for releases that could affect storm water quality. The locked containment valve reduces the risk of releases further since access by personnel is restricted without proper authorization.

Bldg. 51/57/31600–Corrosion Control

Three exposure areas are associated with Corrosion Control. Material storage areas near the Sheep Shed (Bldg. 31600), a hazardous waste storage area near Bldg. 51, and a material storage west of Bldg. 57. The material handling practices and potential releases from each are addressed below.

1. Sheep Shed (Bldg. 31600)

Material Handling: Materials are stored in two areas adjacent to the Sheep Shed. Drums of solid hazardous waste (filters/paper/spent bead blasting media contaminated with chromium primer from painting operations) are stored in an enclosed, bermed area that drains outside to the paved area through a valve that is not lockable. The second bermed area contains methyl ethyl ketone (MEK)/paint wastes, used JP-8, used JP-8 spill pads, and ~~rinse water~~ from painting operations, and also drains through a valve (not lockable) to the paved area. Both areas are covered and have walls on three sides. All liquid drums are grounded and spill kits are available.

Potential Releases: The potential for releases is minimal, since the areas are enclosed and bermed. However, because the valves are currently not lockable, access by personnel without proper authorization is possible. Releases from either area would drain to the surrounding paved area, and could subsequently contaminate storm water runoff. The greatest potential for storm water contamination would be during a drum transfer, during which a large spill outside the berm could enter the storm drain located in a low area 50 ft south of the Sheep Shed.

2. **Material Storage Area: Adjacent to Bldg. 51**

Material Handling: Hazardous wastes from painting operations generated in Bldg. 51 are stored inside the building until a container is full. Full drums are moved down a ramp into the bermed area south of Bldg. 31600. The ramp slopes down into the area, thereby channeling any spills or runoff into the bermed area. The containment drain inside Bldg. 51 is locked and is connected to an oil/water separator on the northwest corner of the building.

Potential Releases: The potential for releases is minimal, since materials are stored in a bermed area that is covered and enclosed. Moreover, any spills or water that accumulates in the bermed area is drained through an oil/water separator that connects to the sanitary sewer. Spills are possible in the transfer of full liquid hazardous waste drums from Bldg. 51 to the bermed area south of Bldg. 31600; however, the potential is minimal, since the ramp is sloped to channel any spills into the bermed area.

3. **Material Storage Area: West of Bldg. 57**

Material Handling: Most product materials are stored inside Bldg. 57; however, some are kept in a covered bermed area that is fenced and locked. The 4-in. berm measures 10 x 20 ft, yielding a containment capacity of about 67 ft³, or 499 gal. All of the drums are grounded. The following conditions are also present:

- ✍ *Horizontally Stored Drums:* The following drums are stored horizontally on stands next to Bldg. 57: acetone, corrosion-removing compound, MEK, and aircraft cleaner. Although there are no locks on the valves, the building is enclosed and covered, drip pans filled with absorbent are provided, and the gate to the facility is padlocked.
- ✍ *Vertically Stored Drums:* Drums of aircraft soap and a spill kit are stored along the fence on the west side of the bermed area.
- ✍ *Drainage:* The area drains to a containment drain that discharges to a concrete containment sump that is vacuumed out as needed. If the waste is nonhazardous, the water is drained to the sanitary sewer.
- ✍ *Material Transfer:* Buckets are filled with the product materials and taken into Bldg. 51 as needed.

Potential Releases: The containment capacity is sufficient to minimize the potential for releases from the area. The use of drip pans for the horizontally stored drums also minimizes the risk of releases. Although the valves on the horizontal drums are not locked, the surrounding fence is, thereby preventing

unauthorized entry. Releases are possible from drips or small spills resulting from the transfer of materials (using buckets) from Bldg. 57 to 51.

Bldg. 51–Nondestructive Inspection (NDI)

Material Handling: Nondestructive inspection utilizes magnetic particle fluid, machine oil, and a penetrant. All materials are stored and staged inside the building. The small amounts of used oil that are generated are staged in a small container; the penetrant and magnetic particle fluid are kept in their vats (where they are used) until their useful life has expired, at which time they are collected and removed from the building (DRMO collects the waste materials from within the building). Although there is an accumulation point berm outside, it is no longer used. The only possibility for a release is during the transfer of waste materials by DRMO.

Bldg. 55–Open Storage

Material Handling: Materials are stored in an uncovered bermed area on Pad 55, which is located north of Bldg. 77 (Open Storage). Pad 55 is a raised, semicovered concrete storage area where materials are staged in different areas. Materials are stored here prior to use in closed containers; no transfer of liquids from container to container occur here. There are large reels of cable and wire in the center, stored in an open area. Compressed gases (acetylene and oxygen) also are stored at Pad 55. Four other material storage areas exist and are described below.

- 1) A large bermed, open storage area is located along the north edge of the pad. Forklifts transfer materials to and from the area via a ramp that slopes downward into the bermed area, thereby channeling any spills that may occur back to the bermed area. The containment area drains to a sump (without a pump). The area also has four drains with unlocked valves; however, these are normally kept closed. Material present during the site visit included MEK, de-icing fluid, lube oil, and PD-680. Other materials may be stored here at other times. Drums are stored on runners to prevent corrosion. Absorbent spill material and spill kits are provided in the area to clean up any spills that may occur.
- 2) A covered, bermed area lies in the northwest corner of the pad. The following materials were present during the site visit: tetrachloroethylene, white paint, acetone, insulating oil, propylene glycol, toluene, xylene, isopropyl alcohol, lube oil, hydraulic fluid, corrosive-controlling compound, and engine cleaning compound. Other materials may be stored here at other times. These materials are in containers of various sizes (up to 55 gal.). Floor drains are locked and drain outside of the pad. A spill kit is also available.

- 3) A covered, unbermed area lies along the east side of Pad 55 and contains various piles of scrap metal and other materials intended for reuse. Since the area is protected from rainfall, any runoff generated would be minimal.
- 4) An enclosed portable building (Bldg. 56) lies in the southeast corner of the pad and is used for ~~excess supply.~~

Potential Releases: The potential for releases is minimal since the areas where liquids are stored are confined. Runoff from Pad 55A would not likely exit the pad. If a large spill occurred at the loading area, it would remain on the pavement on the parking apron. A pump is not provided to empty the sump and could overflow if a heavy rainfall occurs.

Bldg. 68—Chemical Cleaning and Propulsion Shop/Accumulation Point

Three exposure areas are associated with Bldg. 68: two material storage areas adjacent to the building and an accumulation point north of the building. The material handling practices and potential releases from each are addressed below.

1. Material Storage Area: East of Bldg. 68

Material Handling: A 150- to 200-gal. tank is stored in a 1.5-ft bermed area that measures 3 x 12 ft, yielding a containment volume of 54 ft³, or 414 gal. Water that accumulates in the bermed area is drained through two nonlocking valves to the surrounding grassy area. The tank once stored waste calibration fluid and was fed to a calibrator via an underground pipe. Currently, the pipe is disconnected and the tank is scheduled to be removed from service (FY 1997). The calibration fluid is now stored inside Bldg. 68 and is collected by DRMO periodically.

Potential Releases: The potential for releases is minimal, since the tank is not in service. A spill would remain inside the shop.

2. Material Storage Area: South of Bldg. 68

Material Handling: Product drums (i.e., PD-680, 1010 Oil, calibrating fluid, and carbon remover) are stored in an enclosed area with a containment capacity sufficient to contain a 55-gal. spill. The drums are taken inside Bldg. 68 and are subsequently opened and used. Plastic lids are used to prevent the drains from being rained on. The drums are grounded and a spill kit is available.

Potential Releases: The capacity of the containment area is sufficient, thereby minimizing the potential for releases that could affect storm water quality. The use of plastic lids also reduces the risk of storm water contamination. Spills that could contaminate storm water flows are possible in the transfer of the drums from the bermed area into Bldg. 68; however, these risks are minimized by transferring the drums before they are opened.

3. **Accumulation Point: North of Bldg. 68**

Material Handling: The accumulation point north of Bldg. 68 is enclosed by a roof and three sides. All drums (reclaimable JP-8, waste JP-8, used turbine oil, and used fuel filters) are grounded and stored on pallets within a 6-in. bermed area that measures 5 x 20 ft, yielding a containment volume of 50 ft³, or 374 gal. Locked funnels are provided for all of the drums. The bermed area drains to a locked containment valve.

Potential Releases: The risk of release is low, since the area is enclosed to minimize contact with rain. Moreover, the capacity of the containment area and the spill response equipment is sufficient to prevent the release of material that could affect storm water quality. Small releases are possible during transfer operations.

Bldg. 1004—Sewage Treatment Facility

Material Handling: Sanitary wastewater is collected through a sanitary sewer network that discharges to a facultative pond sewage treatment facility at the southernmost point of the Base, approximately 2400 ft from the skeet range (see Figure A3-3). The facility comprises three facultative ponds connected in series. After solids have settled out and have sufficiently biodegraded (i.e., effluent characteristics within NPDES permitted limits), the effluent is discharged to an unnamed tributary that flows into Sacatosa Creek.

Potential Releases: Effluent from the sewage treatment facility is discharged directly into an unnamed tributary that flows into Sacatosa Creek. Therefore, the effluent can affect downstream receptors.

Bldg. 91–Service Station

Material Handling: Vehicles are refueled at two gas pumps (diesel and unleaded gasoline) in a covered area. A grounded used oil drum is stored in a bermed covered shed that is behind the building. The berm has a containment drain with a lockable valve.

Potential Releases: The potential for releases is minimal, since refueling takes place under a roof. The used oil drum is also covered and is confined, thereby minimizing contact with rain. Rain that might affect the drum is contained in the bermed area.

Bldg 100–Civil Engineering

Material Handling: A satellite accumulation point and flammable lockers are stored outside of Bldg. 100 (on the north and south sides of the building, respectively). In addition, a loading ramp is located on the west side. Materials stored include PD-680 (30-gal. vat), water proofer (many small, 10-gal. cans), and paint chips (55-gal. drum). The liquids are stored in a 10 ft x 10 ft x 6 in. berm inside of the satellite accumulation point, which is covered and enclosed on three sides. The berm drains to the north to a grassy area through a locked valve. Drum funnels are present and are not locked; however, the gate to the accumulation area is kept locked. The flammable lockers, which contain various small containers of supplies, are kept locked.

Potential Releases: The potential for contamination of storm water flow is minimal. The accumulation area is kept locked and is accessible only to authorized personnel. A major spill (not more than 55 gal.) could occur during transfer operations or during loading and unloading at the ramp. A spill kit is present. The presence of many small cans of waterproofer (stacked two and three high) may prove hard to manage on the standard containment pallet that is designated. The satellite accumulation point is located approximately 50 yd south of a minor drainage ditch; the loading ramp lies approximately 75 yd east of a major culvert. There is little potential for any contamination from the contents inside the flammable lockers, owing to the fact that only small containers are stored there.

Bldgs. 109/2100–POL

Two exposure areas are associated with Bldgs. 109/2100: a satellite accumulation area and an area for JP-8 ASTs and fuel unloading activities. The material handling and potential releases from each are addressed below.

1. **Satellite Accumulation Area**

Material Handling: Benzene-contaminated condensate from the JP-8 ASTs is sometimes stored in a grounded drum on a spill containment pallet, although none was present during the site survey. The practice of storing condensate here may have been discontinued. The following was also noted during the site survey:

✍ *Condensate Collection:* Any condensate that accumulates in the ASTs or the berms is collected to a 30-gal. bowser. The fuel is separated and pumped back into the ASTs, whereas the condensate is transferred via a hand pump into a 55-gal. drum. The drum is usually stored on a pallet in a shed that is covered and enclosed by three walls. The shed has a 6-in. berm with a locked containment drain. Any rainwater that collects in the bermed area is allowed to evaporate.

✍ *Spill Material:* At the time of the site survey, there were two grounded drums with drum funnels. One contained JP-8 contaminated soil and the other contained JP-8 contaminated spill material.

Potential Releases: Storage of the condensate drum on a spill containment pallet or in a shed minimizes the potential for releases that could affect storm water discharges. However, spills are possible in the transfer of the condensate from the 30-gal. tank to the 55-gal. drum.

2. **JP-8 ASTs and Offloading Area**

Material Handling: 9000-gal. JP-8 tanker trucks offload fuel at the fuel header at Bldg. 109. The fuel is then pumped to three JP-8 ASTs designated as Bldg. 2100 (see Figure A3-2). A fourth inactive JP-8 AST (Bldg. 2125) also is located in the area. The following conditions are also present (as noted during the site survey):

✍ *Offloading Procedure:* Standard Department of Defense (DoD) procedures are followed in fuel offloading procedures. These include using drip pans for disconnections and removing the hose from the truck to drain fuel in the line. Two fill operators are used in offloading operations to ensure immediate response if a spill occurs.

✍ *Offloading Area:* Trucks pull up to the offloading header and remain on a paved surface; however, the offloading area (i.e., offloading headers) are located in a gravel area. A new paved surface (ramp) will be constructed on the other side of the offloading header to serve the increased traffic owing to the new refueling procedures.

✍ *JP-8 ASTs:* Each of the JP-8 ASTs is diked and the valves on the containment drains are locked. The ASTs have high-level alarms for

overspill protection. AST A4 is out of service; AST A2 is scheduled to be taken out of service FY1996. ASTs A1 and A3 will remain in service.

- ✍ *Storm Water Runoff:* Storm water runs through the JP-8 ASTs area to a settling pond (wetlands) just east of the POL.
- ✍ *Fuel Transfer:* Fuel is transferred from the JP-8 ASTs to the flightline area.

Potential Releases: The risk for releases that could affect storm water discharges is high, since containment is not provided for the offloading area and because the area around the headers is not paved. Any spills resulting from offloading operations could permeate into the gravel and contaminate runoff during a subsequent rain event.

Bldg. 125–Power Production Accumulation Point

Material Handling: Used oil and used hydraulic fluid are stored in a 4-in. bermed area west/northwest of Bldg. 125 that is covered and enclosed on three sides. The berm is 10 x 15 ft x 4 in., which yields a containment capacity of 50 ft³, or 374 gal. All of the drums are grounded, and all 5-gal. containers (in the bermed area) are stored on pallets. The berm is drained through a locked funnel, if necessary. Other accumulation areas and the following conditions are also present:

- ✍ *Horizontal Drums:* The 30W AA221J and USRA Super Plus SAE4 40W AA517M are stored horizontally on stands. Drip pans filled with absorbent pads are provided; however, the valves on the drums are unlocked.
- ✍ *Containment Valve:* The valve on the containment drain is locked (as noted during the site survey).
- ✍ *Funnels:* The funnels on the used oil and used diesel drums are locked.
- ✍ *Diesel Generators:* Approximately 12 diesel generators are stored in the area. Drip pans are used when filling the generator fuel tanks and the refueling process is visually monitored. However, oil stains were discovered on the pavement.
- ✍ *Oil Changes:* All oil changes are performed outside using drip pans. Any spills that occur are cleaned up with absorbent spill material.
- ✍ *Washrack:* The CE washrack is located in the CE storage yard west of Bldg. 125. No detergents are used in conjunction with the washrack. The paved area is sloped down to a drain in the center of the yard. Grass and mud tend to accumulate around the drain inlet.

- ✍ *Power Production Equipment Shed:* A storage area is located in the north corner of the parking area, in the northeast corner of Bldg. 110. Waste lube, 1,1,1-trichloroethane, waste paint, and aerosol cans are stored in grounded 55-gal. drums within the building, which is a covered shed open on the south side. A containment berm is not present, but the liquid drums are stored on containment pallets (the aerosol cans are stored on wooden pallets).
- ✍ *Open Areas:* Other areas of the parking lot are used for the storage of heavy equipment of various types. Several ~~rigs~~ or storage cabinets are placed along the northwest side of the parking area and contain new products. An open storage area, surrounded by three walls (about 3 ft high), is also located along the northwest side. This area is not covered and has a gravel bottom (there may be asphalt underneath). Full plastic drums (55 gal.) of corrosion control fluid (for cooling water systems), a drum marked ~~good~~ oil, ~~and~~ and full drums of waste tar are stored here. There is evidence of tar spills on the gravel. This area is adjacent to a major drainage ditch, which is lined with concrete and flows toward the southwest.

Potential Releases: The potential for releases at the satellite accumulation point is minimal, since the area is confined and personnel manage the area well. However, although drip pans are used, diesel fuel and/or used oil can be spilled when refueling the generators and can thus contaminate storm water discharges. Runoff from the washrack in the CE storage yard can lead to increased solids in storm water discharges. Runoff from areas where equipment is stored in the open can lead to low amounts of metals and other constituents in storm water flows. The open storage area along the northwest side of the lot has the highest potential for affecting storm water, owing to its location (adjacent to the storm water ditch) and the lack of good housekeeping.

Bldg. 129–Entomology Shop

Material Handling: All pesticides are stored inside Bldg. 129. These include Amine 2,4-D, granular and liquid diazinon, diazinon dust, princep; trimec, bromax, roundup, primatol 25E, avitrol, dursban, altosid, and MSMA. However, mixing activities are conducted outside within a bermed area that is fenced. Small amounts (slurries) are mixed in a vented mixing room on the north side of the building, in a sink that drains to the sanitary system. The bermed area drains to a containment tank that is opened and closed as needed. The containment tank is emptied if a spill occurs within the bermed area.

Potential Releases: The potential for releases is minimal, since the materials are stored inside the building and all mixing activities are conducted within a bermed area. A small tractor is used to pull a trailer-mounted tank that is backed into the bermed area over a ramp. The slurry is poured into the tank, which is then filled with water. The bermed area has a locked drain that leads to the sanitary sewer system. A spill could occur in the

parking lot or anywhere the equipment is taken for application if an accident were to occur.

Bldg. 131–Motor Pool

Material Handling: Drums of gear oil, hydraulic fluid, used oil, and used antifreeze are stored in a covered bermed area south of Bldg. 131 that is open on one side (see Figure A3-2). Any water that accumulates in the area is visually inspected for sheen or color change before it is drained. If the water is contaminated with oil, it is collected. The valve for the containment drain does have a lock. Empty drums are stored outside after transfer by the DRMO. All vehicle maintenance activities are conducted inside where drip pans are used. The floors inside Bldg. 131 are washed down every Friday; the resulting wastewater drains to an oil/water separator. Waste materials (i.e., oil, hydraulic oil, antifreeze) stored inside are picked up by either Base personnel or are transferred to the satellite accumulation point. The vehicle washrack drains to an oil/water separator. The paint booth, located on the north side of Bldg. 131, generates a waste solvent that is stored inside the paint booth area.

Potential Releases: The potential for releases is minimal, since materials are stored in a bermed area that is covered and enclosed, and because vehicle maintenance activities are conducted inside, rather than outside. Spills that occur during transfer would be less than 55 gal. and would remain on the concrete and could be handled with the provided spill kits. Good housekeeping practices include keeping drum funnels and the containment valve locked.

Bldg. 206–AGE

Material Handling: The material storage area is located off the flightline adjacent to Bldg. 206. Drums of used 7808 oil, used engine oil, and used hydraulic oil are stored on pallets in a covered bermed area that is enclosed by three walls. The bermed area is 6 in. x 10 ft x 10 ft, yielding a containment volume of 50 ft³, or 374 gal. The following conditions also exist:

- ✍ *Grounding:* All drums are grounded.
- ✍ *Funnels:* The funnels on the drums are locked to prevent access by unauthorized personnel.
- ✍ *Inspection:* Water that accumulates in the bermed area is visually inspected for sheen or color change before it is drained to the area through a locked containment valve.
- ✍ *Spill Kit:* A spill kit is provided in the area.

~~✍~~ *New Material:* Various containers of new material is located in two ~~igloos~~ in an unbermed, but covered, area adjacent to the satellite accumulation point. New and used batteries also are stored here.

Potential Releases: The potential for releases is minimal, since the area has adequate containment, the personnel practice good housekeeping, and the area is covered to limit exposure to rain.

Bldg. 209–Aircraft Washrack

Material Handling: The washrack is covered and enclosed on three sides. Blow-off spray and runoff from aircraft washing operations flow outside through the open side into a drain. These drains lead to an OWS, then to the sanitary system. This drain is partially covered with a mat to slow the flow so as not to overwhelm the system. Mats also partially cover the drains inside the building. Two drums (i.e., citrikleen and a 9:1 dilution of citrikleen) are stored horizontally just inside the open side of the building. The valves on these drums are locked and drip pans are provided.

Potential Releases: Releases from the stored materials is minimal, since the drums are covered, their valves are locked, and drip pans are provided. However, water can accumulate around the drains since the flows are partially obstructed with mats. If a heavy rain event occurs, this could lead to overflows that could affect storm water quality.

Bldg. 210–T-38 Maintenance Hangar

Material Handling: Used JP-8, JP-8 spill pads, used hydraulic fluid, and used engine oil are stored in 55-gal. drums located in a satellite accumulation point on the west side of Bldg. 209 (between Bldgs. 209 and 210). Personnel from the T-38 maintenance hangar transport waste materials to this location and pour from buckets through drum funnels, which are kept locked. The accumulation point is covered and enclosed on three sides. Although the two valves that drain the berm are unlocked, one is on the high side of the berm and the other is partially embedded in asphalt. At the time of the site visit, there was a work order to repair the second valve. This valve will drain onto the parking area, which drains south to a small drainage ditch (which subsequently flows to the main drainage ditch that runs parallel to Second Street). Adjacent to the satellite accumulation point, there is an “igloo” for new material and a bowser. Inside the hangar, there are two main floor drains that lead to an oil/water separator.

Potential Releases: The potential for releases from the stored materials is minimal, since the drums are covered and their funnels are locked. If a spill were to occur during transfer activities, the resultant flow could drain into the drainage ditch and could affect storm water quality.

Bldg. 328–Flight Simulator (Storage Area on East Side)

Material Handling: One flammable material storage locker and one waste hydraulic fluid drum are stored on pallets in a covered bermed area that is enclosed on three sides. The berm for the area is 6-in. x 5 ft x 4 ft, yielding a containment capacity of 10 ft³, or 75 gal. Two other empty bermed areas exist and could contain approximately 50 and 100 gal. The drum is grounded but no funnel is provided. The containment valve is locked (as noted during the Base survey). The valve drains to a paved area outside the building.

Potential Releases: The potential for releases is minimal, since the materials are stored within a bermed area that is both covered and enclosed. However, the containment valve is unlocked, and is therefore accessible to unauthorized access that could result in releases. Releases may still occur during transfer of materials to and from this area.

Bldg. 414–T-37 Maintenance Hangar Accumulation Area

Material Handling: New and used materials are stored in three, completely enclosed buildings adjacent to Bldg. 414. Two of the buildings are used for new materials, which are brought to the hangar in their closed containers. Used engine oil and used hydraulic fluid are transferred with buckets or cans from the hangar to drums in the third building. The maintenance hangar has two floor drains that drain to an oil/water separator, which flows to the sanitary sewer after separation.

Potential Releases: The storage buildings themselves are not exposure areas, since they are completely enclosed. However, releases are possible from the transfer of materials to and from the buildings (albeit minimal).

Bldg. 506–T-37 Aircraft Washrack

Material Handling: Two drums (i.e., citrikleen and a 9:1 dilution of citrikleen) are stored against the back wall of the covered T-37 aircraft wash rack area. The area is enclosed on three sides. The valves on the drums are locked. The citrikleen dilution is produced by pouring pure citrikleen from a bucket into a dilution tank. Drains from both sides of the wash rack are connected to an oil/water separator located behind the building.

Potential Releases: The potential for releases is minimal, since the area is covered and enclosed, and the valves on the valves on the drums are locked to restrict unauthorized access.

Bldg. 507–T1A Combs

Material Handling: Very small amounts of JP-8, used hydraulic fluid, rags contaminated with alodine, and used sealer/preservative are generated in Bldg. 507, along with moderate amounts of used engine oil. Activity in Bldg. 507 consists of the breakdown and packing or unpacking and setup of engines that are being transported to and from the Base. As the waste materials are generated, they are brought to the satellite accumulation point that lies to the northwest, which consists of a completely enclosed building with secondary containment under the floor. The waste containers are grounded and have drum funnels. The building remains locked and contains a spill kit.

Potential Releases: Since the waste materials building is completely enclosed and locked, the potential for release is minimal, except during waste transfer operations. The nearest storm water receptor is the main drainage ditch that lies to the west, across Second Street.

Bldg. 508–T-1 Maintenance Hangar

Material Handling: Used JP-8, JP-8 filters, used compressor oil, used hydraulic fluid, and used engine oil are stored in 55-gal. drums located at a satellite accumulation point on the south side of Bldg. 508 (between Bldgs. 507 and 508). Personnel from the T-31 maintenance hangar transport waste materials to this location and pour from buckets through drum funnels, which are kept locked. Drums are stored in the open (no roof or walls) on wooden pallets atop a standard containment pallet. Adjacent to the satellite accumulation point, there is an “igloo” for new material. Inside the hangar, there are two main floor drains that lead to an oil/water separator.

Potential Releases: The potential for releases from the stored materials is higher, since the drums are uncovered. Although funnels are locked, if spills occur during transfer from the hangar and are not fully cleaned up from the drum and its surroundings, rainfall could be contaminated as it falls over the area. If a spill were to occur during transfer activities, the resultant flow could drain south into the drainage ditch and could affect storm water quality. Additionally, a vehicle could strike the drums and cause a spill into the grassy area to the west, which flows to the main storm drain along Second Street.

Bldg. 525–Auto Hobby Shop

Two exposure areas are associated with Bldg. 525: the used oil shed and a hazardous waste accumulation area. The material handling practices and potential releases from each are addressed below.

1. Used Oil Shed

Material Handling: Materials are stored in a covered bermed area. The top of the berm is even with the surrounding pavement; therefore, runoff from the parking lot can drain into the bermed area. However, because the parking lot has drains, runoff from the parking lot does not contribute much to the bermed area. The following conditions are also present (as noted during the site survey):

- ✍ *Oil Change Lift:* A lift pit for oil changes is located next to the open side of the used oil shed. Oil is collected through telescoping funnels (attached to 6-gal. cans) in the pit, and the cans are hand carried to the used oil tank. A lift adjacent to the pits is rarely used.
- ✍ *Used Oil Tank:* During oil change operations, oil is drained into containers that are then poured into the elevated 350-gal. used oil tank inside the used oil shed. If a spill occurs, towels and absorbent pads are available in the spill kit. When the tank is full, the DRMO is notified and the contents are removed.
- ✍ *Funnels:* The funnels on the drums are locked; the manager of the shop keeps the key.
- ✍ *Containment Valve:* The valves on the containment drains do have a lock.

Potential Releases: The potential for releases is minimal, since the shed is covered and is confined. Whenever it rains, absorbent pads must be used in conjunction with sweeping the water that flows into the shed from the parking lot to the drain. This increases the risk of storm water contamination by allowing water to pond and flow into areas of potential contamination.

2. **Hazardous Waste Accumulation Area**

Material Handling: Two grounded drums (dirty gas and waste hydraulic fluid) are stored on wooden pallets in a covered area with a 6-in. berm that measures 15 x 10 ft, yielding a containment capacity of 75 ft³, or 561 gal. The area is enclosed on three sides and is surrounded by a grassy area. The following conditions are also present (as noted during the site survey):

- ✍ *Drainage:* The drain does have a lock, but is located on the "high-side" of the bermed area. The surrounding ground level is higher than the concrete berm on the "low-side"; therefore a drain cannot be placed here unless the area is excavated.
- ✍ *Inspection:* Water that accumulates in the bermed area is visually inspected for sheen or color change before it is drained to the area through the locked containment drain (the water is pushed out of the berm).

✍ *Drum Funnels:* Locked drum funnels have been placed on the waste drums.

✍ *Spill Kit:* A spill kit is provided for the area.

Potential Releases: The potential for releases is minimal since the area is covered, enclosed, and bermed. If a release of waste material were to occur during transfer operations, the spill could possibly travel outside of the shop fence into the grassy area.

3. Antifreeze Recycling Area

Material Handling: Used antifreeze from vehicle maintenance activities is staged in three plastic drums alongside an antifreeze recycling process machine. The drums are placed on flat concrete, which does not have a berm. The antifreeze is passed through the machine twice before being considered clean.

Potential Releases: If one of the drums were punctured, knocked over, or overfilled, the resultant spill would drain off of the concrete into a grassy area (to the south), where slight drainage ditches exist.

Bldgs. 595–Golf Course Maintenance

Material Handling: Two 500-gal. tanks (i.e., diesel fuel and unleaded gas) are stored in an uncovered bermed area. The valve on the containment drain does have a lock and is locked closed. There was no evidence of used oil storage during the latest site visit. A spill kit is present but only has the capacity to address smaller spills.

Potential Releases: Equipment is washed at different areas on the golf course (i.e., not in an enclosed area or over a drain), which can lead to increased solids (i.e., from dirt and dust on the equipment) and the introduction of toxic chemicals (i.e., from residual oil/grease on equipment) into storm water discharges. The refueling of grounds vehicles over the edge of the berm increases the likelihood that a small spill could occur, but any such spill could be contained. A loss of an entire tank's contents by a vehicle collision, for example, could affect areas outside the berm, since the tanks are elevated.

Bldg. 670–Control Tower–AGE Refueling Area

Material Handling: The AGE refueling area is located next to the control tower. The area has two elevated 560-gal. tanks (i.e., JP-8 and diesel fuel) stored in a 1.5-ft bermed area that measures 15 x 20 ft, yielding a containment volume of 300 ft³, or 2244-gal. The

nozzles from the tanks and the containment valve are locked to prevent unauthorized access. The surrounding area is completely paved. However, drip pans are not provided for the tanks.

Potential Releases: The potential for releases is minimal, since the area has adequate containment, locked nozzles, and a locked containment valve. However, small leaks can contaminate water within the bermed area, since drip pans are not provided.

Bldg. 850–Fire Training Area

There is limited use of the Fire Training Area.

Bldg. 2024/2025–DRMO Storage Yard

Material Handling: Materials are stored in an asphalt storage yard adjacent to Bldg. 2025, which is surrounded by a fence. Formerly a gravel surface, the lot was upgraded to asphalt in January 1995. Scrap metal, plastic, various equipment (e.g., washing machines), and spare vehicles are stored in this area. Bldg. 2024 is a lead and sulfuric acid battery storage area. The batteries are stored in a large containment berm inside of a locked building.

Potential Releases: Any residual material (e.g., oil, grease, dirt, and/or dust) on the drums, equipment, and vehicles can be rinsed off during rainfall and flow off of the asphalt lot, thus affecting storm water flows. There is no potential for a release from the battery storage shed, unless the batteries were somehow left outside.

Bldg. 2026–Hazardous Material Storage

Material Handling: All materials are stored inside Bldg. 2026. A grated drain that is connected to a sump runs parallel to the building's entrance. If a spill occurs outside the entrance while materials are being transferred into or out of the building, the materials will run into this grated drain, rather than the surrounding area. Absorbent socks are placed around the drain (which is lower in elevation than the surrounding area) to absorb any spill that may occur.

Potential Releases: The potential for releases is minimal, since all materials are stored inside the building. The grated drain offers an added level of protection against spills that may occur in the transfer of materials to and from the building. Materials could also be spilled as drums are transferred from the satellite accumulation points.

Bldg. 2071–Check Point Area

Material Handling: Tanker trucks are inspected daily at this location. If water is present in the tank, the fuel/water mixture is drained to a bowser. The water is drained from the bowser and collected in an accumulation drum east of the check point area (see Figure A3-2). The following conditions are also present (as noted during the site survey):

- ✍ *Oil/Water Separator:* Storm water is currently diverted from the oil/water separator to the sanitary sewer. Any fuel that accumulates in the oil/water separator is pumped out. However, heavy rains can back up the sewer (which leads to the NDI lab). Wastewater from truck washing activities conducted in the check point area flows into the oil/water separator.
- ✍ *Truck Storage Area:* Approximately 16 trucks are stored in the parking lot adjacent to the check point area. However, the area is not confined.
- ✍ *Product Storage Area:* Two product drums (oil and cleaning soap) are stored on an uncovered pallet. Drip pans are provided beneath the drum spouts.

Potential Releases: The potential for releases is increased, since the truck storage area is not confined, which can result in the contamination of storm water with dirt, dust, oil, and/or greases. Moreover, the product drums are not confined, covered, or enclosed; therefore, rainfall can directly affect the drums and wash off residual material that could contaminate storm water discharges.

Bldg. 2109–Government Vehicle Fueling Area

Material Handling: Government vehicles are refueled at gasoline and diesel fuel pumps connected to ASTs. The fuel pumps are located in a covered area that does not have containment. The ASTs are fueled by the 30,000-gal. tanker trucks.

Potential Releases: The refueling area does not have containment for any spills that may occur during refueling operations. Therefore, any runoff from the area could contaminate storm water discharges. However, it is unlikely that a significant release would occur from individuals filling tanks in government vehicles.

3.4 Significant Spills

SWPPPs are required to briefly describe all significant spills that have occurred within the last three years. This description includes the location, type of material spilled, quantity spilled, and the control and cleanup procedures implemented to remedy the spill. A significant spill, as defined in the EPA *Storm Water Management for Industrial Activities: Developing Pollution*

Prevention Plans and Best Management Practices (1992), includes "... releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (CWA) (see 40 CFR 110.10 and CFR 117.21) or Section 102 of CERCLA (see 40 CFR 302.4)."

On the basis of this definition, no significant spills have occurred at Laughlin AFB in the past three years.

3.5 Sampling Records

All storm water monitoring data will be kept on file at the office of Environmental Engineering. Data will include:

- ? Sampler's name, date, outfall number, outfall location;
- ? Written description of the outfall;
- ? Time rainfall began;
- ? Time storm water discharge began at the outfall
- ? Sample appearance;
- ? Time grab sample was taken;
- ? Times composite samples were taken;
- ? Storm water pH;
- ? Amount of rainfall during 3-hour sampling period (in inches);
- ? Time rainfall event ended;
- ? Rainfall duration (minutes); and
- ? Rain gauge reading of total rainfall for the storm event (in inches).

Another full copy of the results will be on file at the office of the Environmental Engineering SWPPP Coordinator.

3.6 Pollution Risk Identification and Summary of Potential Sources

The information discussed in Sections 3.2 and 3.3 provides an overview of the amounts of significant materials stored in exposure areas and describes potential releases to storm water flows from these areas. These exposure areas contain potential sources of storm water pollution identified in the Base survey. Table 3-5 summarizes these exposure areas, the respective materials, and the outfalls and drainage areas associated with each source.

Table 3-5**Potential Source and Drainage Data**

Building Associated with Exposure Area	Area Description	Drainage Data	
		Area(s)	Outfall(s)
9	Vehicle Refueling and Maintenance Shop	1	001
15/18/19	Engine Test Cell and Trim Pads	1	001
20/21	Pump Station/Refueling Area	1	001
44	Central Used Oil Collection Point	1	001
47	Grounds Maintenance	1	001
50	T-38 Maintenance Accumulation Area	1	001
51/57/31600	Corrosion Control: Sheep Shed	1	001
	Corrosion Control: Material Storage	1	001
55	OHG (Open Storage)	1	001
68	Chemical Cleaning and Propulsion Shop Accumulation Point South	1	001
	Accumulation Point North	1	001
91	Service Station	1	001
100	Civil Engineering	1	001
109/2100	POL: Satellite Accumulation Area	2	02C/002
	POL: JP-8 Offloading Area	2	02C/002
125	Power Production Accumulation Point (West of Bldg. 125)	2	002
129	Entomology	2	002
131	Motor Pool	2	02C/002
206	AGE	1	001
209	Aircraft Washrack	1	001
328	Flight Simulator (Storage Area on East Side)	1	001
414	T-37 Maintenance Hangar Accumulation Area	1	001
506	T-37 Aircraft Washrack	1	001
507	T-1A Combs	1	001
508	T-1 Maintenance Hangar	1	001
525	Auto Hobby Shop: Used Oil Shed	1	001
	Auto Hobby Shop: Hazardous Waste Accumulation Area	1	001
595	Golf Course Maintenance Area	3	003

Table 3-5

(Continued)

Building Associated with Exposure Area	Area Description	Drainage Data	
		Area(s)	Outfall(s)
670	Control Tower: AGE Fueling Area	4	a
2025	DRMO Storage Yard	2	02B/002
2026	Hazardous Material Storage	2	02A/002
2071	Check Point Area	1	001
2109	Government Vehicle Service Station	2	02C/002

a - Storm water flow off-Base from Drainage Area 4 via sheet flow (i.e., no defined outfall).

AGE - Aerospace ground equipment

AST - Aboveground storage tank

DRMO - Defense reutilization and marketing office

MEK - Methyl ethyl ketone

POL - Petroleum/oil/lubricant

UST - Underground storage tank

In general, the principal materials associated with various exposure areas and corresponding handling practices with the potential for release and subsequent contamination of storm water flows are:

- ✍ Fuels (JP-8, diesel, unleaded gas);
- ✍ Oils, lubricants, and greases (from storage, from waste generation, from vehicles and aircraft, and from roadways, runways, and parking areas);
- ✍ JP-8 and oil mixture;
- ✍ Aircraft cleaner (CitriKleen);
- ✍ Paint wastes;
- ✍ Scrap metal;
- ✍ Solvents;
- ✍ Pesticide/herbicide/fertilizer storage and application; and

 Antifreeze.

These materials can impact storm water quality by increasing biochemical oxygen demand, chemical oxygen demand, total suspended solids, nitrogen, phosphates, whole effluent toxicity, and toxic chemical concentrations. Potential releases from the exposure areas associated with the buildings listed in Table 3-5 can affect receiving waters downstream of the outfalls. Table 3-6 summarizes the principal stored materials and industrial activities that can affect storm water flows associated with each of the storm water outfalls.

Table 3-6

Principal Materials and Industrial Activities Associated with Outfalls

Outfall	Principal Material(s) Stored^a	Industrial Activities
001	JP-8 Oil Diesel Fuel Unleaded Gas Aircraft Soap Antifreeze	Aircraft Maintenance/Refueling/Washing Aircraft Fuel Storage/Distribution Aircraft Support Equipment Maintenance Hazardous Waste Accumulation Point Vehicle Maintenance/Refueling/Washing Wastewater Treatment
002	JP-8 Oil	Aircraft Fuel Storage/Distribution Hazardous Waste Accumulation Point Vehicle Maintenance/Refueling/Washing Recycling
003	Diesel Fuel Unleaded Gas	Golf Course Maintenance
004	JP-8 Diesel Fuel	Aircraft Support Equipment Maintenance

^aMaterials stored in excess of 250-gal in any one exposure area associated with a particular outfall.

As discussed in Section 3.1.1, rainfall is minimal in the region; therefore, storm water tends to accumulate in wetlands areas and subsequently evaporate, rather than migrate off-Base and affect downstream receptors. However, during a heavy rain event, storm water that accumulates in wetlands areas can leave the Base through outfalls at the Base property line, and via sheet flows from Drainage Area 4. Generally, storm water flows from the Base do not

intercept populated areas until flowing into the Rio Grande via Sacatosa Creek, Zorro Creek, and an unnamed tributary. However, storm water flows can affect areas of stagnant water and wetlands downstream of the Base.

Storm water flows from Drainage Area 1 are discharged through Outfall 001 to an unnamed tributary that flows through a lightly wooded area before emptying into Sacatosa Creek approximately 3.75 miles downstream. Discharges through Outfall 001 from Drainage Area 2 flow directly into Zorro Creek and can accumulate in an area of stagnant water, approximately 2.75 miles downstream from the Base property line before reaching the Rio Grande. Drainage Area 3 discharges through Outfall 003 to an unnamed tributary that flows through lightly wooded terrain and wetland areas before flowing into the Rio Grande. Storm water flows migrate off-Base from Drainage Area 4 via sheet flows that can contribute to Sacatosa Creek. Downstream of the Base, the Rio Grande passes by several populated areas and empties into the Falcon Reservoir (approximately 125 miles downstream) before ultimately flowing into the Gulf of Mexico.

Contaminant concentrations in runoff from the Base would tend to diminish further downstream, as additional tributaries contribute flow to the creek as water flows onward to the Rio Grande. Although potential risks to downstream receptors are generally minimal because Laughlin AFB employs BMPs to prevent and contain pollutant releases from exposure areas, storm water can become contaminated with releases from the storage of materials and industrial activities. Generally, these activities pose relatively low risks to the integrity of the downstream receiving waters. As long as these operations are conducted in accordance with spill prevention methods, the risks will be minimal.

Downstream receiving waters can also be contaminated with fertilizers, pesticides, and herbicides applied throughout the Base; however, again the risk is minimal since BMPs are used in the application of such chemicals. The application of these chemicals can contaminate storm water discharges from the Base, with the potential to accumulate in downstream receiving waters.

4.0 STORM WATER MANAGEMENT PROGRAM

The purpose of this section is to identify baseline BMPs employed (or to be employed) at Laughlin AFB. These BMPs minimize the exposure of storm water runoff to significant materials, and include:

- ✍ Good housekeeping program;
- ✍ Preventive maintenance;
- ✍ Employee training;
- ✍ Spill prevention and response;
- ✍ Recordkeeping and internal reporting procedures;
- ✍ Sedimentation and erosion control;
- ✍ Facility security;
- ✍ Non-storm water certification;
- ✍ Plan approval/certification; and
- ✍ Pollution prevention initiatives.

4.1 Chemical Storage and Handling Areas for EPCRA Section 313 Water Priority Chemicals

As of CY1997 Laughlin AFB is no longer subject to the EPCRA 313 reporting requirements at this time. The Base uses less than 10,000 pounds per year of MEK, based on the latest data. The Base does not report for any water priority chemicals. If a report is required in the future the following actions would be required.

4.1.1 Special Requirements for EPCRA Section 313 Water Priority Chemicals

The specific controls outlined below will be practiced where EPCRA Section 313 water priority chemicals are stored, handled, and used at Laughlin AFB.

- ✍ Containment, drainage control, and/or diversionary structures are provided:

- ✍ Run-on is minimized by installing curbing, culverts, gutters, sewers, or other controls; and/or
- ✍ Exposure is minimized by covering storage areas.
- ✍ Discharges from liquid storage areas are prevented:
 - ✍ Liquid materials are stored in compatible storage containers; and
 - ✍ Secondary containment is provided and is designed to hold the volume of the largest storage tank plus precipitation.
- ✍ Discharges from material storage areas are prevented:
 - ✍ Drainage and/or other control measures are installed.
- ✍ Discharges from loading/unloading areas are prevented:
 - ✍ Drip pans are used; and
 - ✍ A strong spill contingency and integrity test plan has been implemented.
- ✍ A facility security program has been introduced to prevent spills:
 - ✍ Fencing, lighting, traffic control, and/or secure equipment and buildings are used.
- ✍ Manually-activated valves are used in all containment areas.
 - ✍ Manually-activated valves are locked to limit access/control to personnel with proper authorization, thereby minimizing the potential for accidental releases by unauthorized personnel or civilians.
- ✍ Discharges from handling/processing/transferring areas are prevented:
 - ✍ Covers, guards, overhangs, and/or door skirts are used.

4.1.2 Storm Water Pollution Prevention Team Requirements for EPCRA Section 313 Water Priority Chemicals

The SWPPT has designated the Base Environmental Engineer as the person accountable for spill prevention at the Base. The Environmental Engineer is responsible for setting up necessary spill emergency procedures and reporting requirements to isolate, contain, and clean up spills and emergency releases of Section 313 water priority chemicals before discharges to receiving waters can occur.

4.1.3 Preventive Maintenance Inspection Requirements for EPCRA Section 313 Water Priority Chemicals

All areas of the facility associated with EPCRA Section 313 water priority chemicals will be inspected for the following at the indicated intervals:

- ✍ Leaks or conditions that would lead to discharges of Section 313 water priority chemicals (inspected at least quarterly);
- ✍ Conditions that could lead to direct contact of storm water with raw materials, intermediate materials, waste materials or products (inspected every 6 months); and
- ✍ Conditions of piping, pumps, storage tanks and bins, pressure vessels, process and material handling equipment, and material bulk storage areas that could lead to storm water contamination (inspected for leaks every 6 months), as well as deterioration or non-containment due to wind erosion, corrosion, or support or foundation failure.

The intervals specified above are based on facility design and operational experience. When a leak or other threatening condition is found, corrective action will be taken immediately or the facility unit or process will be shut down until the problem is repaired.

4.1.4 Spill Prevention and Response Requirements for EPCRA Section 313 Water Priority Chemicals

In the event of a spill or leak of a Section 313 water priority chemical, any contaminated soil, material, or debris will be removed promptly and disposed of in accordance

with federal, state, and local requirements. The On-Scene Commander (OSC) is ultimately responsible for spill prevention, response, and reporting procedures at Laughlin AFB; however, the Environmental Engineer is responsible for setting up spill emergency procedures and reporting requirements for spills or releases of EPCRA Section 313 water priority chemicals. Spill prevention and response measures are discussed further in Section 4.5 and are detailed in Laughlin AFB's Spill Prevention and Response Plan (SPR) (Plan 705).

4.1.5 Facility Personnel Training Requirements for EPCRA Section 313 Water Priority Chemicals

Employees and contractor personnel that work in areas where EPCRA Section 313 water priority chemicals are used or stored must be trained in the following areas at least once a year:

- ✍ Preventive maintenance, including spill prevention and response;
- ✍ Pollution control laws and regulations;
- ✍ The Laughlin AFB SWPPP; and
- ✍ Features and operations of the facility that are designed to minimize discharges of Section 313 water priority chemicals, particularly spill prevention procedures.

4.2 Good Housekeeping Program

Good housekeeping practices are currently exercised at Laughlin AFB. Numerous USAF policies and procedures dictate good housekeeping practices and are rigorously enforced at all levels of management. Generally, these procedures involve four key areas:

1. Procedures to minimize the use of chemicals susceptible to exposure and runoff;
2. Procedures to keep exposure areas clean;

3. Procedures to minimize runoff contamination; and
4. Specific procedures for exposure areas and activities addressed in Section 3.

Of these areas, the first three involve procedures that are generally implemented throughout Laughlin AFB, where applicable. These procedures are discussed in Subsections 4.2.1 through 4.2.3. The fourth area deals with specific procedures for particular exposure areas and/or activities. These procedures are therefore more localized to address specific storm water pollution prevention needs at key locations at Laughlin AFB and are discussed in Section 4.2.4.

4.2.1 Procedures to Minimize Chemical Use

Laughlin AFB currently implements or will implement the following procedures to minimize the use of chemicals susceptible to exposure and runoff. Generally, these procedures include inventory reduction and product substitution/elimination and are employed throughout the Base, where applicable.

- ✍ **Hazardous Material Inventories:** The amount of hazardous materials is closely controlled through the maintenance of up-to-date hazardous material inventories and labeling of all hazardous material containers in accordance with U.S. DoD Directive 4210.15, Hazardous Material Pollution Prevention Act of 1990. Tracking such materials reduces the risk of spills by limiting the quantity of stored materials to that which is needed (i.e., fewer excess materials on-hand).
- ✍ **Pollution Prevention Opportunity Assessment:** A pollution prevention opportunity assessment has been conducted in accordance with this SWPPP. The results of the assessment will be used to:
 - ✍ Assemble and review data concerning the processes, operations, and waste management practices within a defined area; and
 - ✍ Identify potential waste minimization alternatives using the collected data.

These objectives will be met by collecting and reviewing data from the field inspection and identifying pollution prevention alternatives for specifically

identified waste streams. These alternatives may include process modifications that substitute toxic chemicals or reduce the amount of materials used that could affect storm water quality.

✍ Basewide Herbicide/Fertilizer/Pesticide Application: The following BMPs are implemented at Laughlin AFB to minimize the amount of herbicides and pesticides contaminating storm water runoff:

- ✍ The use of granulated pesticides and fertilizers at the Base is encouraged;
- ✍ Herbicide and pesticide containers are washed and the rinsate is then used in subsequent applications to grounds throughout the Base, thereby minimizing the amount of chemicals needed.
- ✍ Herbicides/pesticides are mixed only in the amounts needed, and any leftovers are used in previously untreated areas of the Base.
- ✍ No pesticides are applied to ditches or roadways;
- ✍ No application takes place prior to rain events (e.g., within 24 hours of forecasted rain);
- ✍ Application is performed at or below the manufacturer's suggested rate;
- ✍ Low volatility carrier liquids are used;
- ✍ The need for herbicides is reduced by cutting grass more frequently;
- ✍ Use of atrazine has been eliminated, since it tends to leach into the soil;
- ✍ Bait insecticides or rodenticides are used for building treatment;
- ✍ Pre-emergence herbicides are used since they are typically less toxic and prevent germination;
- ✍ The use of phenoxy herbicides is minimized since they are typically used in post-emergence applications;
- ✍ The use of short half-life compounds that have the lowest proven human toxicity is emphasized;
- ✍ Use of new chemicals on the market that have not been thoroughly tested for human toxicity is avoided;

- ✍ Only trained and licensed staff apply the herbicides and pesticides;
- ✍ Fogging for flying insects has been discontinued; Base personnel concentrate on eliminating insect breeding habitats (i.e., reducing stagnant water accumulation areas);
- ✍ Application activities are scheduled such that similar chemicals are applied to all designated areas within several days of each other to make use of any excess and rinsate from previous applications;
- ✍ Personnel are educated on the use of personal insect repellents; and
- ✍ On-site runoff areas are monitored for residual and migrating contamination to identify potential problem sources.

4.2.2 Procedures to Maintain Clean Exposure Areas

The following procedures are or will be implemented throughout Laughlin AFB, where applicable, to keep exposure areas clean, thereby reducing the potential for storm water contamination:

- ✍ Spill Containment Pallets: Self-contained spill containment pallets are used throughout the Base to serve as secondary containment in the event that a drum leaks or ruptures.
- ✍ Routine Cleanup: Routine cleanup is scheduled and conducted for all storage, shop, and work areas to minimize hazardous conditions to the employees and/or the environment. In addition, all work areas are maintained to the standards dictated by the Occupational Safety and Health Act (OSHA), and personnel are provided monthly training in safety procedures and good housekeeping.
- ✍ Material Storage and Handling Practices: Storage areas are maintained in accordance with the following storage techniques:
 - ✍ Adequate aisle space is provided to facilitate material transfer and easy access for inspections;
 - ✍ Containers, drums, and bags are stored away from direct traffic routes to prevent accidental spills;

- ✍ Containers are stacked according to manufacturer's instructions to avoid damaging the containers from improper weight distribution;
- ✍ Containers are stored on pallets or similar devices to prevent corrosion of the containers that can result when containers come in contact with moisture on the ground;
- ✍ Portable blowers, leaf vacuums, and/or other equipment are used to keep exposure areas free of debris (e.g., sediment, dirt, dust), which could lead to increased solids in storm water flows; and
- ✍ The responsibility of hazardous material inventory is assigned to a limited number of people trained in the handling of hazardous materials.

4.2.3 Procedures to Minimize Runoff Contamination

The following procedures are or will be implemented throughout Laughlin AFB to minimize the potential for storm water runoff contamination:

- ✍ Material Storage and Handling Practices: Uniform material storage and handling policies, procedures, and responsibilities are conducted in accordance with DoD Directive 4145.19-R-1, Storage and Materials Handling (see also Section 4.2.4). Such practices include:
 - ✍ Drip Pans: Temporary or permanent drip pans are used to catch drips from valves, pipes, hoses, drains, etc., so that the materials or chemicals can be easily cleaned up or recycled before they can contaminate storm water. Drip pans are used as preventive measures. Therefore, although useful as temporary solutions for containing leaks, repairs will be performed as necessary to reduce the need for drip pans.
 - ✍ Containment Diking: Most exposure areas are diked to provide protection against the contamination of storm water by surrounding the area of concern and isolating the runoff for subsequent analysis prior to release (e.g., to the storm drainage system or sanitary sewer).
 - ✍ Periodic Inspection: Drums and tanks are inspected periodically to ensure proper storage conditions.

- ✍ Spill Kits: Spill kits are provided at all exposure areas to provide timely response to accidental releases. Spill kits should have the capacity to mitigate a spill of the largest single container.
- ✍ Electrical Grounding: Tanks and drums are grounded for sparks to avoid potential explosions and subsequent spills.
- ✍ Locked Funnels: Lids on waste drum funnels are locked to prevent access by unauthorized personnel. By limiting access to materials, the chance for spills, mixing of materials or chemicals, and/or improper handling is reduced.
- ✍ Locked Containment Discharge Drain: Containment discharge drains are locked to prevent access by unauthorized personnel. Rainwater collected in containment areas is visually inspected for contamination prior to draining.
- ✍ Drum Replacement: New or refurbished drums are used to replace old drums as needed to ensure that materials/chemicals are adequately stored in reliable drums.
- ✍ Corrosion Protection: Drums are placed on polyvinylchloride (PVC) footings or pallets to keep the drums out of containment water, thereby reducing the potential for corrosion by preventing moisture contact with the drums.
- ✍ Covering: Most drums are consolidated, placed on pallets or PVC footings, and covered with a roof to prevent storm water contact with the drums.
- ✍ Cathodic Protection: All exposed tanks are cathodically protected, as necessary, to reduce the potential for corrosion.
- ✍ Traffic Guards: Protective guards are installed around tanks and piping in high traffic areas to prevent vehicle or forklift damage to the tanks.
- ✍ Overflow Protection Devices: Overflow protection devices are installed on tank systems to warn the operator or to automatically shut down transfer pumps when a tank reaches full capacity.
- ✍ Labeling: Drums, tanks, pipes, and equipment are clearly tagged or labeled. Labels on tanks and drums indicate the type of material and container contents. Accurate labeling can help Base personnel

quickly identify the type of material released so that personnel can react accordingly.

✍ Transport of Drums/Containers: Only sealed drums/containers are transported. All drums are secured (i.e., banded) together to prevent spills during transportation.

✍ Basewide Herbicide/Fertilizer/Pesticide Application: The following pesticide/fertilizer/herbicide application provisions are implemented to prevent the contamination of storm water runoff:

✍ Herbicides and pesticides are kept inside the Entomology Building, Bldg. 129, which is completely enclosed; and

✍ The application of pesticides and fertilizers is or will be prohibited within 50 ft of a drainage ditch or wetland.

✍ Oil/Water and Oil/Fuel Separators: The SPR Plan 705 delineates the location of oil/water separators and grease traps with respect to particular buildings. These devices are instrumental in preventing the contamination of storm water runoff. The AETC Environmental Reveal Team investigated the destinations of the separators; no cross-connections to the storm sewer system were identified.

✍ POL contaminated water will not be pumped through oil/water separators, since pumping tends to emulsify the oil and reduce the efficiency of the separator. Therefore, POL contaminated water will be discharged to oil/water separators by gravity flow.

✍ Paved Surface Sweeping: Street sweepers are used to remove debris and accumulations from streets and parking lots.

✍ A regular schedule has been established to sweep and shovel streets, parking lots, and storage lot areas.

✍ A regular schedule has been established to move vehicles in parking lots to allow for more thorough sweeping and therefore, a more effective means of reducing potential storm water runoff contamination.

✍ Runway Maintenance: Annual cleaning is performed by a contractor, who applies a solvent to the runways to remove rubber deposits. As the rubber rises from the concrete, the crew shovels the deposits into drums for removal. Since the material remains in a solid form, the potential for runoff is decreased.

- ✍ Outdoor Storage Relocation: Wherever possible, materials previously stored outdoors have been relocated to the inside of existing structures.
- ✍ Loading and Unloading Procedures: Loading/unloading areas have the potential for storm water runoff contamination due to spills or leaks, and due to rainfall washing pollutants off equipment used to load/unload materials. The following measures are employed to minimize storm water contamination:
 - ✍ Loading/unloading activities are or will be performed in areas where leaks can be contained in existing containment and flow diversion systems (i.e., within curbed or diked areas);
 - ✍ Vehicles and equipment are or will be checked regularly for leaks, and any leaks are fixed promptly; and
- ✍ Grounds Watering: Grounds watering is or will be scheduled daily so that no application occurs within 24 hours of a rain event to minimize the amount of storm water runoff.
 - ✍ Watering is not conducted between 6:00 a.m. and 8:00 p.m. to minimize the amount of water lost to evaporation, while reducing the amount necessary to water Base grounds.
 - ✍ All-night sprinklers have automatic shut-offs to avoid excess runoff from watering activities.
 - ✍ Less than 1 in. of watering per week is permitted.
 - ✍ Mowing and pavement sweeping operations are coordinated before watering to minimize the amount of solids entering the storm drainage system.
- ✍ Refueling Areas: In addition to the industrial areas associated with refueling, refueling operations take place on runway aprons; therefore, the following BMPs are implemented:
 - ✍ Overflows: Fuel transfers are monitored constantly to prevent overfilling and spilling. The use of automatic overfill prevention equipment shuts off flow, restricts flow, or sounds an alarm when a tank is almost full.
 - ✍ Topping-Off Tanks: Topping-off tanks is discouraged by training Base personnel and posting signs in visible locations.

✍ Collection of Runoff: Runoff from runway aprons is collected through the use of collection basins or storm water conveyances to allow for treatment of storm water runoff (i.e., using oil/grease/fuel interceptors).

✍ Vehicle and Equipment Maintenance: Storm water runoff from areas where vehicle and equipment maintenance activities occur can become contaminated by various pollutants (i.e., solvents, degreasing agents, fuel, oil). Laughlin AFB implements the following BMPs:

✍ Oil filters are drained before disposal or recycling;

✍ Engine fluids and batteries are recycled and reused on Base (when possible) to minimize the need for additional materials;

✍ Vehicles and equipment are or will be checked for leaks regularly, and drip pans are or will be used to contain leaks; and

✍ Non-toxic or low-toxicity detergents, solvents, and degreasers are or will be used (non-caustic detergents, non-chlorinated solvents, etc.).

✍ Vehicle Washing: Vehicle washing is conducted to remove materials (dust, leaking oils and greases, and spilled materials) that have accumulated on vehicles. Unless removed, residual materials will spread by gravity, wind, snow, or rainfall as the vehicles move across the Base. The wash water enters the sanitary sewer via washracks.

✍ As necessary, wind blocks will be constructed around the vehicle washing areas (i.e., washracks) to reduce spray into uncontrolled areas.

4.2.4 Specific Procedures for Exposure Areas and Activities

In addition to the BMPs in Sections 4.2.1 through 4.2.3, the BMPs outlined in this section are currently implemented to prevent and/or control storm water pollution from the specific exposure areas identified in Section 3.0. The BMPs outlined below are applicable to particular exposure areas or activities. Table 4-1 summarizes the BMPs currently being used at each exposure area and identifies where improvement can be made. The following text contains descriptions of the BMPs that are referred to in Table 4-1.

✍ Material Handling and Storage Practices: As indicated in Section 3.3, the current liquid storage practices at many of the exposure areas have the potential to pollute storm water runoff. Where indicated in Table 4-1, the following BMPs will be employed to prevent contamination of storm water runoff:

✍ Drip Pans: Temporary or permanent drip pans are used to catch drips from valves, pipes, hoses, drains, etc., so that the materials or chemicals can be easily cleaned up or recycled before they can contaminate storm water. Drip pans are used as preventive measures; although useful as temporary solutions for containing leaks, the necessary repairs should be performed immediately.

✍ Containment Diking: Exposure areas are diked to provide protection against the contamination of storm water by surrounding the area of concern and isolating the runoff for subsequent analysis prior to release (i.e., to the storm drainage system or sanitary sewer system).

✍ Electrical Grounding: Tanks and drums are grounded for sparks to avoid potential explosions and subsequent spills.

Table 4-1

Best Management Practices for Specific Exposure Areas

Building Associated with Exposure Area	Area Description	Best Management Practices												
		Locked Facility	Recycling	Non-toxic Detergents	Leak Checks	Transportation	Labeling	Overflow Protection	Traffic Guards	Corrosion Protection	Covering	Spill Kits	Weekly Inspection	Good Housekeeping
		Locked Drain	Locked Funnel	Electrical Grounding	Containment Diking	Drip Pans								
20/21	Pump Station/Refueling Area												X	X
44	Central Used Oil Collection Point		X	O		X	X	X				X		
47	Grounds Maintenance		O	X	O	X	X	X				X		
50	T-38 Maintenance Accumulation Area		X	X	X	X	X	X				X		
51/57/31600	Corrosion Control: Sheep Shed		X	X		O	X	X	X	X		X		
	Corrosion Control: Material Storage	X	X	X			X	X	X	X		X		X
55	OHG (Open Storage)		X			O	X	X	X			X		
68	Chemical Cleaning and Propulsion Shop Accumulation Point South		X	X				X	X			X		
	Accumulation Point North		X	X	X	X	X	X	X			X		
91	Service Station		X	X	X	X	X	X	X			X		
100	Civil Engineering		O	X		X	O	X	X	X		X		X

Table 4-1 Continued

Building Associated with Exposure Area	Area Description	Best Management Practices																	
		Drip Pans	Containment Diking	Electrical Grounding	Locked Funnels	Locked Drain	Good Housekeeping	Weekly Inspection	Spill Kits	Covering	Corrosion Protection	Traffic Guards	Overflow Protection	Labeling	Transportation	Leak Checks	Non-toxic Detergents	Recycling	Locked Facility
125	Power Production Accumulation Point (West of Bldg. 125)	X	X	X	X	X	O	X	X	O				X					
129	Entomology		X			X	X	X	X	X				X					X
131	Motor Pool	X	X	X	X	X	X	X	X	X				X					
206	AGE		X	X	X	X	X	X	X	X				X					
209	Aircraft Washrack	X	X		X		X	X	X	X				X			X		
210	T-38 Maintenance		X	X	X	X	X	X	X	X				X					
328	Flight Simulator (Storage Area on East Side)		X	X	O	X	X	X	X	X				X					
414	T-37 Maintenance Hangar Accumulation Area			X			X	X	X	X				X					X
506	T-37 Aircraft Washrack	X			X		X	X	X								X		
507	T-1A Combs			X	X		X	X	X	X				X					X
508	T-1 Maintenance Hangar		O	X	X		X	X	X	O		O		X					
525	Auto Hobby Shop: Waste Oil Shed		X	X	X	X	X	X	X	X				X					
	Auto Hobby Shop: Hazardous Waste Accumulation Area			X	X	X	O	X	X	X	X			X					
	Antifreeze Recycling Area		O			O		X	O	X				X					

Table 4-1 Continued

Building Associated with Exposure Area	Area Description	Best Management Practices											
		Drip Pans	Containment Diking	Electrical Grounding	Locked Funnels	Locked Drain	Good Housekeeping	Weekly Inspection	Spill Kits	Covering	Corrosion Protection	Traffic Guards	Overflow Protection
2025	DRMO Storage Yard							X					
2026	Hazardous Material Storage		X	X		X	X	X	X	X			X
2071	Check Point Area												
2109	Government Vehicle Service Station		O	X			X	X	X			X	

^aInventory data subject to change based on process needs.

^bMaterial handling practices and industrial activities associated with each area that could impact storm water flows/quality are detailed in Section 3.3.

^cWaste/Product designation: (W) = Waste; (P) = Product.

^dUnits are as 55-gal drums unless otherwise specified.

^eUnits are as gallons (e.g., 4,000-gal tank).

^fUnits are a number of units (i.e., trashcans, batteries, transformers, etc.).

^gAmount and/or type of materials subject to change frequently.

^hMaximum number of antifreeze drums stored inside building during winter.

AGE - Aerospace ground equipment

AST - Aboveground storage tank

DRMO - Defense reutilization and marketing office

MEK - Methyl ethyl ketone

POL - Petroleum/oil/lubricant

UST - Underground storage tank

✍ Locked Funnels: Lids on waste drum funnels are locked to prevent access by personnel without proper authorization. By limiting access to materials, the chance for spills, mixing of materials or chemicals, and improper handling are reduced.

✍ Locked Containment Discharge Drain: Containment discharge drains are locked to prevent access by personnel without proper authorization. Rainwater collected in POL containment areas is visually inspected for contamination prior to draining.

✍ Drum Replacement: New or refurbished drums are used to replace old drums as needed to ensure that materials/chemicals are adequately stored in reliable drums.

✍ Regular Inspection: Drums and tanks are inspected weekly to ensure that storage conditions are adequate.

✍ Spill Kits: As indicated in Table 4-1, spill kits are present at most exposure areas to provide timely response to accidental releases. Additional spill kits will be provided, where needed.

✍ Recycling: Indicates an area where engine fluids and batteries are recycled to minimize the need for additional materials.

4.3 Preventive Maintenance

Laughlin AFB implements several preventive maintenance procedures to reduce the potential for storm water runoff contamination. These include:

✍ ✍ ✍ Recurring Maintenance Program: The USAF Recurring Maintenance Program effectively provides weekly inspections and maintenance of storm water management devices and all hazardous waste satellite and accumulation points, oil/water separators, and Installation Restoration Program (IRP) locations by the contractor, hazardous waste monitors, and the environmental coordinators.

✍ ✍ ✍ Visual Inspections: Visual inspection provisions include:

✍ Storm water outfalls are visually monitored and sampled after storm events by Bioenvironmental Engineering Services, and analysis data are recorded;


































- ✍ ✍ ✍ Water that accumulates in POL containment areas is inspected for sheen prior to drainage through an oil/water separator;
- ✍ ✍ ✍ Dry weather inspections of the storm water drain system are or will be conducted. Such observations are or will be made during normal working hours when sources of non-storm water would typically generate contributing flows. Records of all observed flows and stains, sludges, or other abnormal conditions will be maintained.
- ✍ Material Inventory Procedures: An up-to-date centralized inventory of all contractor and USAF chemical and waste storage drums present at Laughlin AFB is used (e.g., Work Information Management System-based computer program or drum manifest tracking system).

4.4 **Employee Training**

Laughlin AFB implements employee training programs in pollution prevention. These programs will focus on the responses necessary in the event of a pollutant release to ensure the safety of personnel and protection of the environment. These programs are outlined below:

- ✍ Spill Response Plan Training: The SPR Plan 705 for Laughlin AFB establishes personnel training requirements, contractor training requirements, Spill Response Team training, and emergency contingency training. In addition, the following will be included:
 - ✍ ✍ ✍ Under the CWA, owners or operators should schedule and conduct spill prevention briefings for their operating personnel at intervals frequent enough to ensure adequate understanding of the SPR Plan. Such briefings should highlight and describe known spill events or failures, malfunctioning components, and recently developed precautionary measures.
 - ✍ ✍ ✍ Fire department personnel should receive hazardous materials (HAZMAT) training.
- ✍ ✍ ✍ Hazardous Waste Training: The hazardous waste training plan is included in the Laughlin AFB Hazardous Waste Management Plan. Base personnel whose jobs entail working with hazardous waste or who are exposed to hazardous waste are required to be properly trained as required under EPA and OSHA regulations. USAF hazardous waste training covers the

following subjects in addition to the most current federal and state requirements and installation policies:













- | | | | |
|---|---|---|--|
|  |  |  | Introduction to RCRA; |
|  |  |  | Identification of hazardous waste; |
|  |  |  | Accumulation point management; |
|  |  |  | Container use, marking and labeling, and on-site transportation; |
|  |  |  | Waste turn-in procedures; |
|  |  |  | Manifesting and transportation of hazardous waste; |
|  |  |  | Spill prevention and response for emergencies; and |
|  |  |  | Personnel safety and health and fire safety. |
|  |  |  | <u>CWA Required Training:</u> Under the CWA, owners or operators of storage facilities are responsible for properly instructing their personnel in the operation and maintenance of equipment to prevent discharges of oil, and applicable pollution control regulations and rules; and |
|  |  |  | <u>RCRA Required Training:</u> Under RCRA, facility personnel must successfully complete a program of classroom instruction and on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance. |
|  |  |  | <u>Good Housekeeping/BMP Training:</u> Facility personnel will be trained at intervals frequent enough (i.e., annually) to provide an adequate understanding of the good housekeeping and BMPs implemented at Laughlin AFB. This training plan will include instruction regarding material management practices to reduce waste generation through material substitution, improved materials handling, and process enhancements. |

Training schedules and documentation is included as Appendix E. Each time schedules are updated or personnel training programs are completed, Appendix E will be updated.

4.5 Spill Prevention and Response

The SPR Plan 705 establishes procedures and tasks that Laughlin AFB will execute for spill response for both petroleum products and hazardous materials and/or waste. The plan includes site-specific contingency plans that establish spill response procedures at particular locations throughout the Base. Furthermore, it establishes inspection criteria, operational procedures, and training requirements for Base organizations. The plan is reviewed annually, with approval of the Environmental Protection Committee (EPC), to ensure the adequacy of the plan to meet current conditions.




Generally, if a spill occurs, after the safety of personnel has been ensured, the primary goal shall be environmental protection by containing the spill material as close to the source as possible. Spill containment will be accomplished as individual events dictate. This may be accomplished with any one or combination of the following:

-    Using portable spill containment equipment;
-    Using absorbent materials (i.e., spill kits);
-    Blocking the flow at a storm water manhole; and
-    Constructing an earthen dam/berm in the path of or around a spill.




4.6 Recordkeeping and Internal Reporting Procedures

The success of pollution prevention efforts is effectively tracked through recordkeeping and internal reporting. Records of all spills, leaks, inspections, and maintenance activities associated with storm water pollution prevention will be maintained for at least one year after NPDES permit expiration. Inspection and maintenance activities will be recorded in a field notebook. These records will include the following:




-    Storm water sampling reports from Bioenvironmental Engineering; and

   Records of all observed flows, stains, sludges, or other abnormal conditions.

Additionally, the SWPPT will report to the EPC no less than quarterly. The minimum reporting criteria will include:

   Status of the SWPPP;




   Storm water system deficiencies and status of corrective actions; and

   Storm water outfall monitoring data.

To facilitate the recordkeeping process, example work sheets are provided in Appendix F for recording spill information. These work sheets provide spaces to record spill events, including the following information:

   Date of the spill;

   Location of the spill;




   Identification of the material spilled;




   Quantity of material spilled;

   Source of the spill;

   Cause of the spill;

   Response procedures taken;

   Amount of the spill recovered;

   Evidence of exposure to storm water runoff; and

   Preventive measures taken.

4.7 Sedimentation and Erosion Control

Although not widespread, Laughlin AFB has several areas that are subject to erosion. These areas are identified in Section 4.7.1, and existing and potential erosion and sedimentation control measures are discussed in Section 4.7.2.

4.7.1 Identification of Sedimentation and Erosion Areas

Drainage ditches and storm drain inlets throughout the Base were identified as general types of areas that have the potential for erosion and silting. The main drainage ditch parallel to 2nd Street has lost its vegetative cover and has the potential to be eroded. Revegetation, frequent watering, and visual monitoring will be implemented to reestablish the vegetative cover before the next significant rainfall.

4.7.2 Sedimentation and Erosion Control Measures

The sediment and erosion control measures in place at Laughlin AFB include vegetative covers, xeriscaping, rip-rap, and pavement. When construction activity warrants, additional controls such as hay bales and silt fences are added.







4.8 Facility Security

Laughlin AFB is a secured facility; the perimeter is fenced, and guards are posted at entrances and exits. These measures effectively limit access of unauthorized personnel to the facility. Additionally, access to materials stored in 55-gal drums located in exposure areas (see Section 3.0) is limited to trained and authorized personnel through the use of locked fences or drum funnels.































4.9

Non-Storm Water Certification

In accordance with Section 4.10, the certification on page iii of this SWPPP assures that all storm water outfalls have been tested and the resulting data have been evaluated for the presence of non-storm water discharges. This certification includes the following:

- | | | | |
|---|---|---|--|
|  |  |  | Identification of the test method used and the dates the testing was conducted and the date the results were evaluated; and |
|  |  |  | A description of the results of the dye test that identifies the on-site drainage points that were directly observed during the test and any potential storm water discharges that were found. |













Authorized non-storm water discharges at Laughlin AFB include:

- | | | | |
|---|---|---|---|
|  |  |  | Discharges from fire fighting activities, not including fire training exercises; |
|  |  |  | Fire hydrant flushing; |
|  |  |  | Potable water sources including lateral or building waterline flushing; |
|  |  |  | Irrigation drainage; |
|  |  |  | Routine external building washdown without the use of detergents or other compounds; |
|  |  |  | Pavement washdowns, providing that toxic or hazardous materials are not present in the washdowns; |
|  |  |  | Air conditioning condensate discharge; |
|  |  |  | Springs and uncontaminated groundwater infiltration or runoff; |
|  |  |  | Foundation or footing drain discharges without contamination from process materials such as solvents; and |
|  |  |  | Lawn watering runoff. |

Additionally, non-storm water discharges can include wastewater streams permitted under the NPDES permit (i.e., sewage treatment pond effluent from Outfall 001). The multi-sector general permit allows certain non-storm water discharges (as listed above) if those discharges are documented in the SWPPP and pollution prevention measures are outlined.

4.9.1 Test Method for Non-Storm Water Sources

The AETC Environmental Reveal Team conducted dye tests, described below, of all drains in the buildings at Laughlin AFB to identify any non-storm water discharges contributing to storm water flows. The dye tests were performed from July 7, 1993 through July 16, 1993. The Reveal Team also televised the sanitary sewer lines and studied the storm water system in 1995. The results of both are discussed in Subsection 4.9.2 and included in Appendix D. Where applicable, any of the following test methods for non-storm water sources can be employed by the AETC Environmental Reveal Team or private contractors.

- | | | | |
|---|---|---|---|
|  |  |  | <u>Dye Testing:</u> Dye tests were used to detect improper connections to storm water collection systems. They were performed by releasing dye into drains including, sanitary wastewater and process wastewater system drains, and examining the storm water discharge points for discoloration. Appendix D contains a detailed description of the equipment needed and proper procedures for a dye test. |
|  |  |  | <u>Videotape Survey:</u> The results of the survey were being reviewed to identify any cross-connections, and subsequently designate appropriate modifications for the storm sewer system. |
|  |  |  | <u>Smoke Testing:</u> Similar to the dye test, smoke is added to a drain, and the points where smoke escapes are examined to determine whether they contribute to storm water drainage discharges. A building with cross-connections can be identified if smoke emanates from the stack vent on the roof. However, the absence of smoke does not conclusively rule out cross-sections, because settlements in pipes can block the path of the smoke. |
|  |  |  | <u>Visual Inspections:</u> Visual checks of all discharge points are performed and documented. These inspections should be performed during dry weather. |

- ✍ ✍ ✍ Building Utility Schematic Drawings: Building utility schematic drawings will be reviewed and documented.
- ✍ ✍ ✍ Sewer Map: A review of all building schematics will be performed to determine if there are any interconnections into the on-site storm water collection system. The schematics or a sewer map should depict pipes and drainage systems used to carry process wastewater, non-contact cooling water, air conditioner condensate, and sanitary wastes. If such maps are unavailable or unreliable, the pathways of these water circuits should be examined, including an investigation of where floor drains discharge.
- ✍ ✍ ✍ Excavation: This option is used to find the source or destination of a pipe by excavating over the length of the pipe. Alternatively, ground-penetrating radar may be used.

4.9.2 Identification and Evaluation of Non-Storm Water Sources

The results of the tests discussed in Section 4.9.1 showed that one cross-connection was identified between the sanitary and storm water sewers, but the location is unclear. Other findings were that the floor drains in Buildings 91, 206, 210, 219, and 404 flow to the storm drain. These nonstorm water sources will be eliminated. Additionally, the following conclusions were drawn from the I/I Cross-Connection Study of the sanitary sewer system:

- ✍ ✍ ✍ The estimated annual I/I (to the sanitary sewer system) is 2.7 million gal. based on monitoring data that were collected and evaluated from this study.
- ✍ ✍ ✍ The overall physical condition of the sanitary sewer was found to be satisfactory.
- ✍ ✍ ✍ The study indicated that infiltration does not have a large impact on the system since the groundwater depth is much lower than the collection system. However, small amounts of infiltration were noted during the physical inspection of the sanitary sewer. The infiltration was attributed to an underground stream or a break in a water line.

The study area in which these tests were performed was divided into two wastewater collection subsystems; A and B. Wastewater from both subsystems flows into a

detention pond the south end of the Base, which is the wastewater treatment system for Laughlin AFB. Subsystem A is on the northeast side of the Base and collects wastewater primarily from commercial sources. Subsystem B is on the southwest side of the Base and primarily collects wastewater from the residential housing areas.

4.10 **Plan Approval/Certification**

This SWPPP has been authenticated by the Wing Commander following its review and subsequent approval by the EPC. The certification is on page iii of this SWPPP.

4.11 **Pollution Prevention Initiatives**

During the implementation phase, the SWPPP will be continually reviewed by the SWPPT to ensure that BMPs are implemented, storm water monitoring is accomplished, and an effective training program is introduced. Specific review initiatives include or will include:

- ✍ ✍ ✍ **Site Maps:** Ensure that site maps are completed and that the data are reviewed and accurate.
- ✍ ✍ ✍ **Materials Inventory:** Ensure that the materials inventory data have been reviewed and finalized.
- ✍ ✍ ✍ **Best Management Practices:** Review BMPs and incorporate necessary changes.
 - ✍ ✍ ✍ Review good housekeeping practices.
 - ✍ ✍ ✍ Review preventive maintenance practices.
 - ✍ ✍ ✍ Review utility schematic drawings and document findings.
 - ✍ ✍ ✍ Perform and document visual inspections of the storm water system.
 - ✍ ✍ ✍ Initiate work orders and/or projects to repair the storm water system as required from data collected from visual inspections,

review of utility schematic drawings, and the AETC Environmental Reveal Team findings.



Review of Existing Base Plans: Evaluate existing Base plans to ensure consistency and overall effectiveness.



Employee Training: Expand the current Hazardous Waste Management training program to encompass the training requirements of the SWPPP. The training will address the components and goals of the SWPPP and will emphasize the sensitivity of storm water pollution prevention concerns.



Storm Water Monitoring and Sampling Procedures: Ensure that permit-driven monitoring and sampling requirements are met. See Section 6 for details concerning the monitoring requirements established by the EPA's Multi-Sector General Permit.

5.0 COMPREHENSIVE SITE COMPLIANCE EVALUATION

The SWPPT is responsible for appointing a qualified team to conduct a site compliance evaluation annually. This compliance evaluation team (CET) will be composed of members from the SWPPT and/or other Base personnel. Standard survey forms will be used to maintain consistency of surveys and information transfer. The purpose of the evaluation is to:

- ✍ Confirm the accuracy of the description of potential pollution sources;
- ✍ Determine the effectiveness of the plan; and
- ✍ Assess compliance with the terms and conditions of the permit.

5.1 Annual Site Compliance Evaluation

To ensure consistency of surveys and information transfer, the CET evaluation will use survey forms similar to those provided in Appendix F, as listed below:

- ✍ Form 1: Identifying Information
- ✍ Form 2: Significant Material Inventory
- ✍ Form 3: Significant Materials
- ✍ Form 4: Significant Material Exposure Area Descriptions
- ✍ Form 5: Measures and Controls
- ✍ Form 6: Good Housekeeping Measures Checklist
- ✍ Form 7: Sediment and Erosion Control
- ✍ Form 8: Non-Storm Water Discharges
- ✍ Form 9: Storm Water Management Practices
- ✍ Form 10: Material Management

- ✍ Form 11: Site Evaluations
- ✍ Form 12: Preventive Maintenance Measures: Part 1
- ✍ Form 13: Preventive Maintenance Measures: Part 2
- ✍ Form 14: Inspection Plan
- ✍ Form 15: Comprehensive Site Compliance Evaluation
- ✍ Form 16: Record Keeping and Internal Reporting
- ✍ Form 17: Significant Material Exposure Areas

At a minimum, the CET evaluation will consist of the activities outlined below. Where applicable, the survey forms that may be instrumental in performing these activities are referenced.

- ✍ Inspection of all storm water drainage areas for evidence of pollutants entering the drainage system (Reference Survey Forms 2, 3, 4, and 8);
- ✍ Evaluation of the effectiveness of BMPs;
- ✍ Observation of structural control measures, sediment controls, and other storm water BMPs to ensure proper operation and to evaluate effectiveness (Reference Survey Forms 5, 6, 7, 9, and 10);
- ✍ Revision of the plan as needed within 2 weeks of inspection and implementation of any necessary changes within 12 weeks of the inspection; and
- ✍ Preparation of a report summarizing inspection results and follow-up actions that identifies the date of the inspection and the personnel who conducted the inspection. The report will also contain a full copy of the field data sheets (Reference Survey Forms 1, 11, 12, 13, 14, and 15).

5.2 Recordkeeping and Internal Reporting

Records will be maintained of all spills, leaks, inspections, and maintenance activities associated with storm water pollution prevention for at least 1 year after NPDES permit expiration. These records will be maintained by the Environmental Engineering SWPPP Coordinator and the Headquarters AETC SWPPP Supervisor.

The SWPPT will report no less than quarterly to the Pollution Prevention Team. Reporting criteria will include, at a minimum, status of the SWPPP, storm water system deficiencies and status of corrective actions, and storm water outfall monitoring data.

5.3 Plan Revisions

The SWPPP will be reviewed by the SWPPT at least annually and revised as necessary to incorporate any major changes in operations. In addition, reviews will be conducted under any of the following conditions:

- ✍ Notification is received from the state to perform a review of the SWPPP;
- ✍ A spill has exceeded containment;
- ✍ Construction activities have affected or will affect storm water flows and/or discharges; and/or
- ✍ Circumstances arise that might impact storm water quality (i.e., malfunctioning storm water pollution prevention controls).

6.0 STORM WATER SAMPLING AND MONITORING PROGRAM

This section briefly describes the sampling and monitoring program at Laughlin AFB. As program requirements and field conditions change, this program will be modified. As part of the SWPPP, the sampling and monitoring program will be revised annually.

6.1 Monitoring and Analysis

The EPA's Multi-Sector General Permit establishes specific monitoring requirements for facilities under the industry specific subsections of the regulation. On the basis of these requirements (which are additive), Laughlin AFB is subject to analytical and visual monitoring requirements for all three of its industry classifications (air transportation facility, hazardous waste storage facility, and treatment works) described in Section 1.1. These requirements are outlined in the following paragraphs.

As an air transportation facility, Laughlin AFB would be required to monitor for the parameters outlined below:

- ✍ Biochemical oxygen demand (BOD);
- ✍ Chemical oxygen demand (COD);
- ✍ Ammonia; and
- ✍ pH.

However, these requirements were developed for facilities that use 100,000 gallons or more of glycol-based deicing/anti-icing chemicals. Laughlin AFB does not regularly use these types of chemicals because ice is not a major problem in the area. Therefore, Laughlin AFB is not required to monitor discharges resulting from deicing/anti-icing activities.

Requirements for hazardous waste storage, treatment, and disposal facilities generally include visual monitoring and analytical monitoring. At Laughlin AFB a visual grab sample should be collected quarterly (from Outfall 2) and observed for color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil, sheen, and other notable characteristics. The visual reports should be maintained on site.

For hazardous waste storage, treatment and disposal facilities in general, analytical samples should be collected on a quarterly basis during the second year of the permit and analyzed for:

- ✍ Ammonia;
- ✍ COD;
- ✍ Total recoverable metals (As, Cd, Pb, Hg, Se, Ag); and
- ✍ Total cyanide.

Within three months after the end of the second (and possibly the fourth) year of sampling, a report must be submitted that demonstrates a calculated average concentration for the parameters listed above. If the average concentration of any analyte is less than the industry specific monitoring requirements (60 Federal Register 50936), then monitoring for that analyte is no longer required, unless significant changes have been made to the facility or to BMPs.

Currently, only visual surveys are required for facilities where treatment works exist. Although there are no additional analytical requirements for treatment works (other than visual surveys), additional analytical sampling may be required by other permits. The visual survey should be conducted in the same manner as described above.

Records of all monitoring information will include the following:

- ✍ The date, location, and exact time of sampling or measurements;
- ✍ The initials or name(s) of the individual(s) who performed the sampling or measurements;
- ✍ The date(s) analyses were performed;
- ✍ The time(s) analyses were initiated;
- ✍ The initials or name(s) of the individual(s) who performed the analyses;
- ✍ References and written procedures, when available, for the analytical techniques or methods used; and
- ✍ The results of such analyses, including bench sheets, instrument readouts, computer disks or tapes, and any other data used to determine these results.

All monitoring will be conducted according to approved test procedures under 40 CFR 136.

6.2 Sampling Procedures

Sampling will be conducted under the supervision of the Bioenvironmental Engineer.

6.2.1 Qualifying Sampling Event

Storm water samples will be obtained from a representative rainfall event. A representative rainfall is a rainfall that is "typical" for the area in terms of intensity, volume, and duration. Storm water discharge permit application requirements establish the following criteria for the type of storm event that will be sampled:

- ✍ The depth of the storm must be greater than 0.1-in. accumulation;

- ✍ The storm event must be preceded by at least 72 hours of dry weather (72 hours since previously measurable > 0.1-in. rainfall event); and
- ✍ Where feasible, the depth of rain and duration of the event should not vary by more than 50% from the average depth and duration (i.e., average rainfall intensity of 0.13-in./hour over a duration of 8 hours).

These criteria were established to: (1) ensure that adequate flow would be discharged, (2) allow some build-up of pollutants during dry weather intervals, and (3) ensure that the storm would be "representative" of a typical storm event. If no significant rainfall or qualifying sampling event occurs in a quarter, a report will be sent to TNRCC stating the circumstances.

6.2.2 Sample Collection

The representative rainfall event will first be sampled to provide water quality data for the initial runoff period (i.e., a grab sample to measure first flush effects). Therefore, sampling will begin immediately after flow begins at the outfall. A flow- or time-weighted sample will also be collected and analyzed separately from the grab sample to provide an estimate of the average runoff water quality for the storm event.

Both grab and composite samples will be analyzed for the same parameters. All samples will be collected, handled, and analyzed in accordance with the procedures established in 40 CFR Part 136.

SECTION 09915

COLOR SCHEDULE

PART 1 GENERAL

1.1 GENERAL

This section covers only the color of the exterior and interior materials and products that are exposed to view in the finished construction. The word "color" as used herein includes surface color and pattern. Requirements for quality and method of installation are covered in other appropriate sections of the specifications. Specific locations where the various materials are required are shown on the drawings. Items not designated for color in this section may be specified in other sections. When color is not designated for items, the Contractor shall propose a color for approval.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-04 Samples

Color Samples for Verification

6 sets of color samples, 120 days after the Contractor is given Notice to proceed, complying with the following requirements:

- a. Materials shall be labeled with the finish type, manufacturer's name, pattern, and color reference.
- b. Samples shall be on size A4 or 8-1/2 by 11 inch boards with a maximum spread of size A1 or 25-1/2 by 33 inches for foldouts.

PART 2 PRODUCTS

2.1 REFERENCE TO MANUFACTURER'S COLOR

Where color is shown as being specific to one manufacturer, an equivalent color by another manufacturer may be submitted for approval. Manufacturers and materials specified are not intended to limit the selection of equal colors from other manufacturers.

2.2 COLOR SCHEDULE

The color schedule lists the colors, patterns and textures required for exterior and interior finishes, including both factory applied and field applied colors.

2.2.1 Exterior Walls

Exterior wall colors shall apply to exterior wall surfaces including recesses at entrances and projecting vestibules. Conduit shall be painted to closely match the adjacent surface color. Wall color shall be provided to match the colors listed below.

- a. Brick: Acme Blend 300.
- b. Mortar: Natural grey.
- e. Metal Wall Panels, Hardware, and Associated Trim: Dark brown to match metal roof.
- g. Precast Concrete: Laticrete Antique White #23.
- h. Glass and Glazing: Solarbronze.

2.2.2 Exterior Trim

Exterior trim shall be provided to match the colors listed below.

- a. Doors and Door Frames: Medium bronze.
- b. Windows (mullion, muntin, sash, trim, and sill): Medium bronze.
- d. Fascia: Dark brown to match metal roof.
- e. Downspouts, Gutter, Louvers, and Flashings: Dark brown to match metal roof.
- f. Handrails: Dark brown.
- g. Soffits and Ceilings: Dark brown to match metal roof
- h. Signage: Dark brown to match metal roof.
- j. Caulking and Sealants: Dark brown.

2.2.3 Exterior Roof

Roof color shall apply to exterior roof surfaces including sheet metal flashings and copings, mechanical units, roof trim, pipes, conduits, electrical appurtenances, and similar items. Roof color shall be provided to match the colors listed below.

- a. Metal: Dark brown.

2.2.4 Interior Floor Finishes

Flooring materials shall be provided to match the colors listed below.

- a. Carpet: See Specification Section 09680.
- b. Vinyl Composition Tile: Armstrong "Sandrift White" 51850.
- c. Ceramic Tile: Crossville "Veranda Stone" V523.
- d. Porcelain Tile: Daltile "Spice" DK-22.
- e. Grout: Medium grey.
- f. Concrete: Clear Sealer.

2.2.5 Interior Base Finishes

Base materials shall be provided to match the colors listed below.

- a. Resilient Base and Edge Strips: Roppe "Toffee" P182.
- b. Carpet Base: Match floor carpet.
- c. Ceramic Tile: Match floor tile.
- d. Porcelain Tile: Match floor tile.
- e. Grout: Medium grey.

2.2.6 Interior Wall Finishes

Interior wall color shall apply to the entire wall surface, including reveals, vertical furred spaces, grilles, diffusers, electrical and access panels, and piping and conduit adjacent to wall surfaces unless otherwise specified. Items not specified in other paragraphs shall be painted to match adjacent wall surface. Wall materials shall be provided to match the colors listed below.

- a. Paint: Pittsburgh "Arabian Sands" 319-4.
- b. Vinyl Wall Covering: TRI-KES Versa Bali A41-684 "Sienna".
- d. Ceramic Tile: Daltile "Mexican Sand" K-174.
- e. Ceramic Tile Grout: White.
- g. Brick: Match exterior brick.

2.2.7 Interior Ceiling Finishes

Ceiling colors shall apply to ceiling surfaces including soffits, furred down areas, grilles, diffusers, registers, and access panels. Ceiling color shall also apply to joist, underside of roof deck, and conduit and piping where joists and deck are exposed and required to be painted.

Ceiling materials shall be provided to match the colors listed below.

- a. Acoustical Tile and Grid: USG Beige 142.
- b. Paint: Pittsburgh "Elegant Ivory" 319-1.

2.2.8 Interior Trim

Interior trim shall be provided to match the colors listed below.

- a. Doors: Natural red oak.
- b. Door Frames: Match wall color.
- c. Windows (mullion, muntin, sash, trim, and stool): Medium bronze.
- e. Fire Extinguisher Cabinets: Match wall color.
- f. Handrails: Natural red oak.
- h. Metal Stairs: Match wall color.

2.2.9 Interior Miscellaneous

Miscellaneous items shall be provided to match the colors listed below.

[AM0001] a. Plastic Solid Surface Countertops: Nevamar FOUNTAINHEAD FM-2-0 "Boston Matrix".

[AM0001] b. Plastic Solid Surface Tub Surrounds: Nevamar FOUNTAINHEAD FS-7-0 "Linen".

~~[AM0001] Signage Message Color (excluding handicapped signage): White.~~

~~[AM0001] Signage Background Color (excluding handicapped signage): Dark brown.~~

c. Corner Guards: Clear.

d. Casework: Natural red oak.

PART 3 EXECUTION (Not Applicable)

-- End of Section --

SECTION ~~22222~~09950

SEAMLESS ACRYLIC WALL COATINGS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

STANDARDS DEVELOPMENT ORGANIZATION (ACRONYM)

ASTM E 84	1991a Surface Burning Characteristics of Building Materials
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ASTM D 1653	Water Vapor Permeability
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1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Submit manufacturer's technical information including installation instructions. Care and Maintenance instructions, product description, and product test data conforming to the test performances required herein. Test data may be submitted in printed form from the manufacturer's standard printed material; however, if requested, Contractor shall submit specific performance test information as certified by independent laboratory analysis (as furnished by the manufacturer to support performance claims).

SD-14 Samples

Prior to beginning work, Applicator shall make and submit samples of the selected colors and textures for Specifier's review. Provide for each sample a listing of materials and the application for each coat of material.

On 4' x 8' substrate at the job site, provide two (2) samples of each specified color(s) and texture to simulate actual conditions.

Resubmit samples as requested by Contracting Officer until acceptable.

If substrate is to be concrete masonry, provide two in-field examples, 4 foot square, on masonry for each color/texture.

On actual wall surfaces and other building components, duplicate finishes as selected on at least 100 sq. ft. of surface, as directed, until acceptable sample is obtained; simulate finished lighting conditions for review of in-place work.

Final acceptance of finish will be from samples applied on the job.

1.3 DELIVERY AND STORAGE

1.3.1 Delivery of Materials

Materials shall be delivered to the job site in original, new and unopened packages and containers bearing manufacturer's name and label, and following information: Name or title of materials, Manufacturer's stock and/or batch number, date of manufacture, contents of containers including color name and number.

1.3.2 Storage

Store materials not in active use in tightly covered containers. Maintain containers in a clean condition, free from foreign materials and residue. Protect from freezing and maintain temperatures below 100 degrees F. Keep materials stored in an orderly and organized manner to reduce the risk of error. Do not stack materials more than three containers high. Protect from fire hazards.

1.4 ENVIRONMENTAL REQUIREMENTS

- a. Apply materials only when surface temperature is between 60 and 100 degrees F. If dry conditions cause rapid drying of the materials before proper finishes can be completed, eliminate breezes, fans or other air movements which contribute to the problem and if necessary dampen the substrate with finely misted water just prior to application.
- b. Protect finishes from casual impact for a period of forty-eight hours after installation. Protect from heavy traffic for a period of at least three days. Protect all surfaces and adjacent areas not intended to be coated and clean immediately any spillage, droppings, or other extraneous contact of the materials with other surfaces.
- c. Remove masking tape and clean all adjacent surfaces at the end of each work day.
- d. Do not leave masking tape or waste materials in place until hard, generally not to exceed 12 hours.

1.5 EXTRA MATERIALS

The installing contractor shall provide at least three gallons of each batch number of materials installed with a list identifying where each batch number was installed.

PART 2 PRODUCTS

2.1 SEAMLESS ACRYLIC WALL COATINGS

2.1.1 Seamless Acrylic Wall Coatings

Provide texture equal to Duroplex "Sierra" and color to match wall paint as stated on finish schedule. Samples of texture and color available from Corps of Engineers office issuing specifications.

2.1.2 Materials

Material Quality: Finished and fully cured (28 days) materials shall have the following minimum performance characteristics:

Barcoll Hardness Index: 35.0 or greater
ASTM E84 Flame Spread: 8.5 or less
Smoke Contribution 7.0 or less
Federal Aviation Agency Vertical Burn Test #FAR 25.853(b): 0.1 seconds or less
Water Vapor Performance ASTM E 96, B: 27.5 English perms or greater
UPITT (LC50) for thermal decomposition: 150 grams or greater
Scrubability: Two hundred strokes of stiff brush with soap and water 0.001 inches erosion or less.
Material Warranty: 10 years
Mold and Mildew Warranty: 10 years
Product must be in commercial use for a time period that meets or exceeds stated warranty period.
Solvent Resistance: 1 hour soak
Water: Slight softening*
Detergent: No change
Ethanol: No change
Naphtha: No change
Ammonium Hydroxide: Slight softening*
Ethylene Glycol: No change
Bleach (household): Slight softening*
409 Cleaner: Slight softening*
Paint Remover: Slight softening*
Mineral Spirits: No change

* Slight softening: Is noted to mean a temporary softening. Original hardness regained after drying.

Stain Resistance: 10 hour soak and wash with 409 Cleaner or bleach and water.

Water: No stain visible
Blood: No stain visible
Urine: No stain visible

Coffee: No stain visible

Tea: No stain visible

Blueberry: No stain visible

Mustard: No stain visible

Mildew Resistance: No visible mildew after incubation for ninety days in 95 degrees F and 90% relative humidity under high contamination conditions.

Color Pigments: All pigments shall be pure, non-fading and bleach resistant.

Color Selection: Provide at least sixty factory colors and factory custom color service.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

3.1.1 General

Perform preparation and cleaning procedures in accordance with manufacturer's recommendations and as herein specified, for each particular substrate condition.

Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish coated, or provide masking or other protection prior to surface coating operations. Following completion of coating of each space or area, reinstall removed items.

Clean surfaces to be coated before applying any materials. Remove oils and grease prior to mechanical cleaning. Program cleaning and coating so that contaminants from cleaning process will not fall into wet or newly coated surfaces.

3.2 SURFACE PREPARATION

3.2.1 Drywall

Prepare drywall to industry acceptable standard for hanging vinyl wall covering. Remove excess gypsum compound dust. Dampen surface slightly with a light spray mist of water just prior to application of acrylic wall coating materials.

3.2.2 Cementitious Substrates

Prepare cementitious surfaces such as concrete, concrete block, cement plaster, etc. by cleaning as noted above; then patch all minor holes, honeycombs, etc., using structural grout as specified in the specific division of these specifications. Then grind, fill, and float smooth all form seams and other minor imperfections using an acrylic silica filled surfacing compound as supplied by the acrylic wall coating manufacturer. Allow acrylic surfacing compound to dry 24 hours. If substrate is plaster, dampen dry plaster and concrete surfaces just prior to installation of materials but wipe away any active condensation or water sufficient to cause a wet glaze.

3.2.3 Ferrous Metals

Clean free of oil and surface contaminants with non-petroleum based solvent. Prime all bare metal surfaces with a good quality rust inhibiting primer prior to application of any acrylic coating materials.

3.2.4 Galvanized Surfaces

Clean free of oil and surface contaminants with non-petroleum based solvent.

3.2.5 Existing Painted Surfaces

Clean surface with soap and water to remove oils, dust, etc. Lightly sand surface to improve adhesion (total removal of gloss is not necessary).

3.3 INSTALLATION

3.3.1 Materials Preparation

Stir materials before application with a power drill and a drywall compound paddle. Stir at approximately 350 RPM for three minutes while removing material from all sides and bottom of the container. Stir only as much material as will be used in a four hour period or re-stir material left sitting in excess of four hours. Retain lid on containers until the material is in actual use. Do not leave containers open for more than one hour. If hardened material accumulates on the sides of the container, remove the material to a clean container before use.

Coating materials come premixed wet and with color already in the container. Should storage or shipping expose materials to excessively high or low temperatures, viscosity may be effected. Thinning may be done with small amounts of water. See manufacturer's written instructions for thinning information.

3.3.2 Application

3.3.2.1 General

Apply coating materials in accordance with the manufacturer's instructions and recommendations as required to achieve the appearance of the approved samples and performance as specified herein. Coating materials shall be used as a system which may include primers or undercoatings as required by the manufacturer's installation directions.

Final dry film thickness shall be a minimum average of 20 mils. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces.

3.3.2.2 Finishes which Require Primer

Apply acrylic coating manufacturer furnished primer with a 1/4 to 3/8 inch nap paint roller at a coverage rate of 240 square feet per gallon. Allow to cure until firmly set.

3.3.2.3 Finishes which Require Undercoat

Primer and undercoat are not used simultaneously. Apply factory supplied undercoat at a rate of 250 square feet per kit (60 pound net pail). Apply with a hopper spray to achieve visible coverage. Wet film material should be approximately 20 mils thick. Apply undercoat to a uniform level finish without holidays or runs.

3.3.2.4 Applying Finish Coats

Apply finish coats in accordance with manufacturer's instructions and training until all finishes match quality samples previously approved by specifier.

3.4 CLEANUP AND PROTECTION

3.4.1 Cleanup

During progress of work, remove the site discarded coating materials, rubbish, cans, and rags at the end of each day.

3.4.2 Protection

Protect work of other trades, whether to be coated or not, against damage by coating work. Correct any damage by cleaning, repairing, or replacing, and refinishing, as acceptable to Specifier

Provide signs, barricades, etc., as required to protect new work from damage by others.

After completion of work of all other trades, remove all protection material (including other trades' if provided by them) and clean/touch up as necessary to restore coating work to new and unblemished condition.

-- End of Section --

SECTION 10101

MISCELLANEOUS ~~ITEMS~~ SPECIALTIES & EQUIPMENT[AM0001]

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

THE ALUMINUM ASSOCIATION (AA)

AA-03 (Sep. 1980, 7th Ed.) Designation System
for Aluminum Finishes

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 814 (1983) Fire Tests of Through-Penetration
Fire Stops

PORCELAIN ENAMEL INSTITUTE (PEI)

PEI S 100 (1965) Architectural Porcelain Enamel on
Steel for Exterior Use.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Fabrication/Erection/Installation Drawings; G, ED.

Drawings shall be submitted for each product listed in PART 2 PRODUCTS. Drawings shall show sizes, details of construction, method of construction, method of assembling, hardware materials, colors, method of mounting, location of each item, specifications for surface preparation and installation of items, and all other details pertinent to installation. For each product, drawings shall identify all parts by name and material. Materials fabricated or delivered to the job site before approval of the drawings shall be subject to rejection.

SD-03 Product Data

Manufacturer's Catalog Data; G, ED.

1.3 DELIVERY AND STORAGE

Materials and products shall be delivered to the site in the manufacturer's original unopened containers with brand name and type clearly marked. Materials and products shall be carefully handled and stored in dry, watertight enclosures.

1.4 FIELD MEASUREMENTS

Field measurements shall be taken prior to the preparation of drawings and fabrication to ensure proper fits.

PART 2 PRODUCTS

2.1 GENERAL

Supplementary parts necessary to complete each product item shall be included even though such work is not definitely shown or specified. The Contractor shall furnish to the proper trades all anchors, sockets, or fastenings required for securing items to other construction. Details and specifications of items for which standard products are available are representative guides of requirements for such items. Standard products, generally meeting such requirements, will be accepted, if details of construction and installation are approved by the Contracting Officer.

2.1.1 Metal Thickness

Gages of sheet iron and steel specified are U. S. Standard for sheet and plate. Extruded sections shall be at least 3.125 mm thick, unless otherwise specified or shown on the drawings.

2.1.2 Aluminum Frames

Aluminum frames, trim, and accessories shall be fabricated of 6063-T5 or T6 extruded aluminum alloy. Corners and connections shall be hairline miter or butt joints. Exposed aluminum surfaces shall have a satin finish. Satin finish shall be chemically etched medium matte anodic coating, Class II Architectural, 0.4 mil thick, in accordance with AA-03, dark bronze color.

2.2 FIRE EXTINGUISHER CABINETS

Metal fire extinguisher cabinets shall be furnished and installed where shown on the drawings or specified. Cabinets to be located in fire-rated walls shall be fire-rated type, fabricated in accordance with ASTM E 814, and shall be listed by an approved testing agency for 1- and 2-hour combustible and non-combustible wall systems. The testing agency's seal shall be affixed to each fire-rated cabinet. Cabinets shall be of the recessed type suitable for size extinguishers specified in this section. Box and trim shall be of heavy gage rolled steel. Door shall be a rigid

frame with full length piano type hinge and double strength (DSA) glass panel. Door and box shall have the manufacturer's standard finish inside and out.

2.3 PORTABLE FIRE EXTINGUISHERS

General: Provide fire extinguishers of type, size, and capacity for each cabinet and other locations indicated.

2.3.1 Multipurpose Dry-Chemical Type

UL-rated 2-A:10-B:C, 4.5-kg nominal capacity, in enameled-steel container.

2.3.2 Mounting Brackets

Manufacturer's standard steel, designed to secure extinguisher, of sizes required for types and capacities of extinguishers indicated, with plated or baked-enamel finish.

a. Provide brackets for extinguishers not located in cabinets.

2.4 [AM0001] MISCELLANEOUS SPECIALTIES AND EQUIPMENT

2.4.1 Screen, Projection

Projection Screen: Ceiling mounted recessed unit, motorized operation, 2438 x 2438 mm screen with automatic ceiling closure. Equipped with electric motor operator, up/down rocker operating switch, grooved roller, ball bearing mechanical system, non-gloss matte white frame and mildew resistant surface. Complying example: "Boardroom Electrol" Model by Da-Lite Screen Co. Inc.

2.4.2 Ice Machine, Dispensing

Dispensing Ice Machine: Automatic ice making and dispensing machine consisting of air-cooled icemaker unit mounted on push-button automatic dispensing bin. Options: Provide for push-button dispensing operation; provide 152 mm legs. Complying example: CME 506 Ice maker with HD 356 Dispensing Bin by Scotsman.

Size: Ice maker overall - 762 mm wide x 659 mm high x 610 mm deep.
Dispensing bin overall - 762 mm wide x 1270 mm high (including legs) x 727 mm deep.

Capacity: Production 227 kg (500 lb.) Storage 86 kg (190 lb.)

Electrical: Ice maker - 115/60/1, 19 MCA Dispensing Bin - 115/60/1, 2.5 MCA

2.4.3 Dishwasher

Dishwasher: Automatic dishwasher with 6 cycles, stainless steel interior, food grinder, NSF verification, stainless steel exterior finish. Complying example: KUDC25CH by KitchenAid.

2.4.4 Refrigerator, Reach-In

Reach-in Refrigerator: Refrigerated merchandiser, 4 adjustable vinyl coated wire shelves, triple pane thermal glass self closing doors, fluorescent interior lighting, aluminum with white acrylic exterior finish, white vinyl laminate interior finish, stainless steel interior bottom.

Size: 768 mm wide x 1988 mm high x 743 mm deep.

Capacity: 26 cu. ft.

Electrical: 115/60/1, 8.0 MCA

Complying example: GDM-26 by True Food Service Equipment, Inc.

2.4.5 Freezer, Reach-In

Reach-in Freezer: Frozen food merchandiser, 4 adjustable vinyl coated wire shelves, heated triple pane thermal glass positive seal self closing doors, fluorescent interior lighting, aluminum with white acrylic exterior finish, white vinyl laminate interior finish, stainless steel interior bottom, time-initiated temperature-terminated automatic defrost system.

Size: 768 mm wide x 1988 mm high x 743 mm deep.

Capacity: 26 cu. ft.

Electrical: 115/60/1, 14.0 MCA

Complying example: GDM-26F by True Food Service Equipment, Inc.

2.4.6 Vents, Bricks

Brick Vents: Extruded aluminum architectural brick vents, 6063T5 aluminum, 3mm nominal wall thickness, mortar ribs top and bottom, 18 x 14 mesh aluminum insect screen, 1.6mm thick aluminum duct extension through wall.

Size: 206 mm wide x 121 mm high x 102 mm deep.

Finish: Medium bronze anodized

Complying example: BE-847 by Greenheck.

2.4.7 Louvers, Architectural

Architectural Louvers: Extruded aluminum high performance architectural louvers, 6063T5 aluminum, 1.6 mm nominal wall thickness frame and J style louvers, inside aluminum bird screen.

Size: 51 mm deep - see mechanical drawings for width and height.

Finish: Medium bronze anodized

Complying example: EDJ-202 by Greenheck.

2.4.8 Rod and Shelf, Closet

Closet Rod & Shelf: Chromium plated open steel wire shelf unit with integral hanging rod of chromium plated steel tubing 16 mm maximum diameter, 2.1 mm minimum wall thickness. (Hanging rod cannot exceed 16 mm diameter in order to fit special hangers furnished by the Government - substitution of standard diameter closet rod is not acceptable). Matching end support brackets, and matching intermediate J-shaped support brackets designed to allow hangers to slide full length of rod (intermediate brackets spaced maximum 750 mm o/c along length of shelf and rod).

2.4.9 Surrounds, Tub

Tub Surrounds: Surrounds for bathtubs shall be solid acrylic polymer sheet material 7 mm thick, as specified for countertops in Section 12320.

2.4.10 Boards, Marker

Marker Boards: White LCS 24 gage porcelain enamel steel, laminated to 0.44 mm hardboard core, with 0.4 mm aluminum sheet backing panel. Complying example: "Vitracite" system by Claridge Products and Equipment, Inc.

2.4.11 Ceiling, Panel, Wood

Wood Panel Ceiling: Wood panels constructed of wood chips impregnated with halogen free organic fire retardant factory bonded between 2 layers wood veneer finish to provide Class B Flame Spread per ASTM E 84.

Finish: Natural red oak with satin finish.

Suspension System: As specified for lay-in acoustical ceiling in Section 09510.

Complying example: "WoodWorks" wood veneer ceiling panel system by Armstrong World Industries.

PART 3 EXECUTION

3.1 PREPARATION AND INSTALLATION

Mounting surface preparation and product installation shall be in accordance with the product manufacturer's written recommendations.

3.2 ~~[AM0001]BULLETIN BOARDS~~

~~Bulletin boards shall be mounted with the top edge not higher than 160 mm above the floor.~~

3.3 CLEANING

Following installation, dirty or discolored surfaces of the products shall be cleaned, with the products left free of defects. Products that are damaged or improperly installed shall be removed and reinstalled or replaced with new products as directed.

-- End of Section --

SECTION 12320

CABINETS AND COUNTERTOPS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z124.3 (1995) American National Standard for Plastic Lavatories.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 570 (1995) Water Absorption of Plastics

ASTM D 638 (1997) Tensile Properties of Plastics

ASTM D 2583 (1995) Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor

ASTM E 84 (1997a) Surface Burning Characteristics of Building Materials

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

BHMA A156.9 (1994) Cabinet Hardware

KITCHEN CABINET MANUFACTURERS ASSOCIATION (KCMA)

KCMA ANSI/KCMA A161.1 (1995) Performance & Construction Standards for Kitchen and Vanity Cabinets

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA LD 3 (1995) High-Pressure Decorative Laminates

1.2 DESIGN

Cabinets shall be wood, factory-fabricated and finished in the manufacturer's standard sizes and finishes of the type, design, and configuration indicated. Cabinets shall be constructed as specified and shall meet the requirements of KCMA ANSI/KCMA A161.1. Wall and base cabinet assemblies shall consist of individual units joined into continuous

sections. Fastenings shall be accomplished to permit removal and replacement of individual units without affecting the remainder of the installation. Counters shall be provided with watertight sink rim when indicated. Drawers shall be removable and shall be equipped with position stops to avoid accidental complete withdrawals. Shelves shall be fixed or adjustable as indicated.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Installation; G, ED

Drawings showing each type of cabinet and related item, and clearly indicating the complete plan, location, and elevations of the cabinets and accessories and pertinent details of construction, fabrication, and attachments.

SD-03 Product Data

Cabinets; G, ED

Countertops and Backsplash; G, ED

Manufacturer's printed data, catalog cuts, installation and cleaning instructions.

SD-04 Samples

Cabinets; G, ED

Countertops and Backsplash; G, ED

In lieu of individual samples, complete minimum size cabinets may be furnished as samples. Mock-up units are not acceptable. Samples shall be of sufficient size to show color, pattern, and method of assembly.

- a. Countertop and backsplash - One section, containing both.
- b. Door and drawer front - One of each, with hardware mounted.
- c. Countertop color samples approximately 50 x 75 mm size.
- d. Stain/color samples approximately 50 x 75 mm size.

SD-06 Test Reports

Cabinets and Countertops; G, ED

Test reports certifying that all cabinets comply with the requirements of KCMA ANSI/KCMA A161.1. Tests shall be conducted by independent laboratories approved by KCMA. KCMA certification seals affixed to the cabinets will be accepted in lieu of certified test reports.

1.4 DELIVERY AND STORAGE

Cabinets shall be delivered to the jobsite wrapped in a protective covering. Cabinets shall be stored in accordance with manufacturer's recommendations in an adequately ventilated, dry location that is free of dust, water, or other contaminants and in a manner to permit access for inspection and handling. Cabinets shall be handled carefully to prevent damage to the surfaces. Damaged items that cannot be restored to like-new condition shall be replaced.

PART 2 PRODUCTS

2.1 CABINETS

Wall and base cabinets shall be of the same construction and same outside appearance. Door design shall be solid flush face from vendors standard styles. Shelves shall be fully adjustable. Adjustable shelves shall be capable of adjusting on approximately 75 mm increments. Shelves shall be supported by self-locking clips. Shelves shall be minimum 13 mm thick plywood. Drawer fronts shall be solid hardwood to match cabinet door construction.

2.1.1 Frameless Type Cabinets

The cabinets shall be of frameless design and construction. Cabinets shall be constructed of minimum 16 mm thick plywood, end and floor panels. Cabinet back shall be constructed of minimum 5 mm thick, tempered hardboard or plywood. Hanging rails shall be doweled and glued to end panels, then fastened and hot melt glued to cabinet back. Toe kick plates shall be recessed, doweled and glued to the end panels. Top and bottom corners shall be braced with either hardwood blocks glued together with water resistant glue and nailed in place, or fastened with metal or plastic corner braces.

2.2 CABINETS

Wall and base cabinets shall be of the same construction and same outside appearance. Door design shall be framed inset hardwood panels from vendors standard styles. Shelves shall be fixed. Shelves shall be minimum 13 mm thick plywood. Drawer fronts shall be 19 mm thick solid hardwood frame with hardwood plywood panel.

2.2.1 Frame Type Cabinets

The cabinets shall be constructed with frame fronts and solid ends, or frame construction throughout. Frame members shall be 19 mm thick by 38 mm wide; kiln-dried hardwood, glued together, and shall be either mortised and tenoned, dovetailed or doweled, nailed, stapled or screwed. Top and

bottom corners shall be braced with either hardwood blocks that are glued together with water resistant glue and nailed in place, or metal or plastic corner braces. Backs of wall cabinets shall be 3 mm thick plywood, tempered hardboard or 9 mm thick, 20 kg density particle board. Backs of base and tall cabinets shall be 9 mm thick hardwood or 9 mm thick, 20 kg density particle board. Bottoms of cabinets shall be minimum 9 mm thick plywood 20 kg density particle board or good grade plywood and shall be braced with wood members glued in place. Cabinet ends shall be 16 mm thick hardwood plywood.

2.3 COUNTERTOPS AND BACKSPLASH

2.3.1 Solid Polymer Countertops

Countertop and backsplash shall be constructed of sheet material for sink/lavatory cutout; as shown. [AM0001] Material shall be ~~19~~19 mm thickness, cast, and filled nonporous solid surfacing composed of acrylic polymer, mineral fillers, and pigments. Superficial damage to a depth of 0.25 mm shall be repairable by sanding or polishing. Material shall comply with the following performance requirements.

- a. Tensile Strength; 18.3 N/mm^2 , when tested in accordance with ASTM D 638.
- b. Hardness; Barcol Impressor 50 when tested in accordance with ASTM D 2583.
- c. Flammability; rated Class I with a flame spread of 25 maximum and a smoke developed of 100 maximum when tested in accordance with ASTM E 84.
- d. Boiling water resistance; no effect when tested in accordance with NEMA LD 3.
- e. High temperature; no effect when tested in accordance with NEMA LD 3.
- f. Liquid absorption; 0.06% maximum (24 hours) when tested in accordance with ASTM D 570.
- g. Sanitation; National Sanitation Foundation approval for food contact in accordance with Standard 51 and approval for food area applications.
- h. Impact resistance; no failure for ball drop when tested in accordance with NEMA LD 3.

2.4 FINISH

2.4.1 Cabinet Finish in Offices and Employee Work/Break Areas

Cabinets shall be provided with a factory-applied plastic laminate finish in accordance with KCMA ANSI/KCMA A161.1 requirements and of a type standard with the manufacturer. Exposed exterior surfaces shall be

melamine plastic finish.

2.4.2 Cabinet Finish in Guest Rooms, Lobby, and Conference

Cabinets shall be provided with a factory-applied durable finish in accordance with KCMA ANSI/KCMA A161.1 requirements and of a type standard with the manufacturer. Natural finish wood doors, drawer fronts, cabinet fronts, and exposed cabinet sides shall be fabricated of red oak which will be free of extreme color variations within each panel or between adjacent panels. Exposed exterior surfaces shall be hardwood or grade A-A hardwood veneer with natural stain and sprayed on factory applied finish.

PART 3 EXECUTION

3.1 INSTALLATION

Cabinets shall be installed level, plumb, and true to line, and shall be attached to the walls or floors with suitable devices to securely anchor each unit. Countertops, accessories, and hardware shall be installed as indicated on the drawings. Installation shall be in accordance with the manufacturer's approved printed instructions. The inner edge of sink cut-outs in laminated plastic tops shall be painted with a coat of semigloss enamel paint and sink flanges shall be set in a bed of sealant. Closer and filler strips and finish moldings shall be provided as required.

Prior to final acceptance, doors shall be aligned, and hardware shall be adjusted.

3.2 CLEANING

Cabinet and countertop surfaces shall be cleaned in accordance with manufacturer's instructions.

-- End of Section --